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Contents

Articles

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Volume 87 **New York, February 1, 1933** **Number 5**

Rubber Textiles[1]

Take On a New Form and Offer New Possibilities

TAKE something old and something new and add a lot of imagination. If you are fortunate, the blend may result in a creation like Lastex.

The knitting of covered rubber thread into surgical stockings has been carried on for 3 generations. Covered rubber was first woven about 1889 when the Bike athletic supporter was placed on the market. What *is* new is a thread of a fineness such that it can be knit on fine gage machines and woven into semi-sheer fabrics. Lastex, the first product to conform to these specifications, is a blend of the old desire for an elastic textile, the comparatively new process of making a rayon filament by forcing a liquid through a small orifice and then hardening, and the still newer latex products.

Research has developed compounds of latex to the point where they can be applied in a liquid state and solidified by temperatures even as low as obtained by the ordinary home radiator.

It is reasonable to suppose that one of the compounds of latex, in liquid form, can be forced through a small orifice —just as the viscose rayon solution is forced—and then solidified. The result is a continuous, round rubber thread; the fineness being determined by the size of the orifice.

Covering such a rubber thread with cotton, silk, rayon, or wool, presents certain difficulties. Covering fine copper wire with yarns as fine as 140/1 cotton is nothing new; neither is covering a rubber thread. In the one case, however, the medium to be covered is not elastic; and in the other the thread is considerably coarser. Here details are lacking, but the supposition is that the methods of covering wire were combined with the ring traveler principle: the yarn being spiraled about the rubber thread.

Fine Yarns Used in Covering

To take a fine rubber thread and cover it with a coarse yarn would obviously defeat the purpose of making a fine thread in the first place. Consequently, we find such a yarn as 100/1 cotton most used; worsted yarns up to 1/105s; and rayon and acetate yarns of 45, 75, and 100 denier. The yarns are usually wound multiple end, as this increases production on the covering machine. The exact size of the yarn and the number of ends are determined by the size of the rubber thread to be covered.

No accurate comparison can be made by ordinary yarn-numbering systems between the covered rubber thread and ordinary yarn sizes, since rubber is compact and weighs more per yard than a cotton or worsted yarn of similar diameter. However a rough estimate would be that a covered rubber thread can be produced of about the same diameter as a 30/1 cotton yarn.

The old process of producing an elastic textile was to take a sheet of rubber 120 yards long and cut it into narrow strips; the square threads being later covered with cotton, wool, silk, or rayon. Producers of this type of elastic thread are frank to admit that they did not see the potentialities of really fine covered rubber. They were content to produce a coarse thread that could be used in knitting elastic hose for varicose veins, or woven as a warp in narrow fabrics. In fact the tendency of manufacturers was to produce coarser types as time went on. Lastex woke them up with the dawn of new light on the whole situation.

Far from fighting the Lastex development, most of the old-line manufacturers of covered rubber thread have cashed in on the resultant publicity. They simply started to cut the rubber in finer strips and developed machine refinements which would enable them to cover a fine thread. Both the Lastex and cut-rubber methods have certain advantages. The rubber thread of Lastex is round, continuous, and can be made finer. Cut-rubber specialists claim that, due to the fact that the tail of the rubber molecule is knocked off during the usual vulcanization, their product has less of an elongation factor; in other words, it will return more nearly to its original length after stretching. Whatever other distinctive merits each type may have, however, they are submerged when the whole development of a fine elastic textile is considered.

Usage Has Been Varied

Uses? In clothing, vertically from shoes to hats; horizontally from corsets to sweaters. There can be no question that the depression has aided the growth of fine covered rubber thread. Firms have tried, as they have

[1]Reprinted from *Textile World*, Jan., 1933, pp. 50-51.

Textile World

Durene Covered Lastex Foundation Garment. Its 2-Way Stretch Provides Perfect Fit and Comfort

never tried before, to produce something new. Many of the experiments will undoubtedly peter out, but many will end in success.

The first developments were along the usual lines. Covered rubber thread had been used for years in women's girdles, but the elastic feature had been confined to the warp. A fabric was constructed with the usual elastic warp and the new fine covered rubber as filling; and the "2-way stretch" was born. What with modern styles women desired a foundation garment which would combine the maximum of restraint with the minimum of bulk, and it was but a step to weave the fine thread in both warp and filling, thus producing a semi-sheer elastic fabric. Such fabrics have been used both as inserts in foundation garments and to construct the entire garment.

From there the story leads into diverse fields. The close-fitting hats of today require an individual fitting when constructed with the usual textile materials. A hat that would fit any head was greatly to be desired. An elastic textile supplied the answer. Weave a fabric with every tenth or twentieth warp end of tensioned elastic and when taken from the loom, you have a fabric with a crepe appearance that, when made into a hat, will fit the head of a giant or a dwarf. The so-called "crinkle" fabrics produced in this manner have been particularly popular, and many variations of cotton, rayon, silk, or wool have been used. Even velvets have been woven with tensioned elastic; the effect being a soft, luxurious fabric with the contour of a very rough crepe.

A peculiar fabric with a "waffle" appearance has been produced where tensioned elastic is spaced in both warp and filling. For example, if every twentieth end in the warp and every twentieth pick in the filling is of tensioned rubber covered thread, release of the tension after weaving will cause small puffs of the fabric between the squares formed by the elastic threads.

One of the earliest uses of fine covered rubber thread was in men's half hose. At the top of the sock a strip was knit of a rubber thread covered with a material similar to that used in the body of the sock. The resulting sock stayed in place without use of a garter. The same idea has been used with considerable success in golf hose.

Several of the larger bathing-suit manufacturers have announced that their 1933 lines will feature the "2-way stretch." In some of the garments the rubber thread covered with fine worsted yarn will be knitted in conjunction with the regular worsted yarn throughout the entire suit. In others the elastic feature will be confined to certain sections. Manufacturers claim that such a swimsuit will always be form-fitting, but will not bind. Woven fabrics of worsted and elastic are also being used for bathing suits.

Many novelties have been produced. Among them might be mentioned knitted gloves of fine covered rubber which will fit the daintiest hand as closely as they will fit a truck driver's fist. Women's mesh stockings with style appeal are a strange sort of cousin to the old surgical stocking.

The most fascinating field for speculation is the extent to which fine covered rubber thread will be used in the major items of clothing, such as dresses and suits. Some of the Parisian dressmakers are said to be considerably exercised over the possibility of doing away with the need for alterations by cunningly using inserts of elastic at strategic points. Ultimate incorporation of the elastic feature into the entire garment is something to stagger the imagination; sizes would mean little, and the staid dowager could wear her debutante daughter's clothing, or the other way around.

At the present moment it seems more likely that elastic thread will be used only in sections of clothing rather than in the entire garment. Sport skirts with elastic tops are an actuality as are sweaters with fitted waistlines. No matter what the future brings, fine covered rubber thread has already taken its place as one of the depression's prize "babies."

Textile World

White Velvet with Fine Cut-Rubber Ends in the Warp Which Contract and Give a Rough Crepe Effect

Scientific Charts

For Lantern Slides

THE suggested practices given below relate to engineering and scientific charts constructed for use as lantern slides. Although certain general principles apply to the entire field of graphics, including time-series charts, computation charts, illustrative diagrams, etc., no attempt is made to cover such a broad field. Instead attention has been directed chiefly to general[1] and specific suggestions that apply to the most common engineering and scientific charts: line charts which show the relation between 2 variable quantities.

Charts made in accordance with these recommendations are suitable for use as lantern slides when reduced to 1/3 of their original dimensions. With slight modifications as to line widths[2], these recommendations are also applicable to charts prepared for use both as lantern slides and as illustrations for publication.

GENERAL

1. An engineering or scientific chart shown on a lantern slide is only an illustration, presupposes explanation by the speaker, and usually cannot be complete in itself.

2. It should present one central idea and should be free from all lettering and lines that are not essential to a clear understanding of its message. The number of words on the chart should be held to a minimum (a useful rule is to aim at a total of not more than 15 words, or not more than 20 words if there is a title).

3. Supplementary data or formulas should not be shown unless absolutely necessary, in which case they should be isolated in position and enclosed by a light line border.

4. Proportions of about 7 by 10 are suggested[3] for the overall dimensions of lantern slide charts. In choosing between a vertical and a horizontal rectangle, consider which one presents the material more effectively.

5. When the amount of lettering is held to a minimum, vertical Gothic capitals are recommended as highly legible and easy to construct. (See Figures 1, 2, 3, and 4.)

For the average lecture hall or auditorium, legibility throughout the hall is obtained[4] if the smallest lettering on the slide consists of capital Gothic letters 0.040-inch to 0.045-inch high, having a line width of about 0.006-inch. It is recommended that in preparing charts for lantern slide use the original chart be made 3 times the final lantern slide size, in which case the smallest letters should be made about 1/8-inch high with a line width of about 0.017-inch[5]. (See Figures 1 and 2.)

For charts with very little lettering which are not to be used for publication a somewhat larger size of letter is suggested.

6. In general a satisfactory lantern slide can be produced by using lettering of substantially the same size throughout. Titles, if included, should be made slightly larger.

7. All lettering and numbers on a slide should be placed horizontally, if practicable. Any lettering or numbers for which this position is not practicable should face toward the right-hand side of the slide.

EDITOR'S NOTE. These data are taken from "American Recommended Practice Engineering and Scientific Charts for Lantern Slides," approved by American Standards Association, November, 1932. Sponsored by the American Society of Mechanical Engineers, 29 W. 39th St., New York, N. Y.
[1]For references see "Notes" beginning at the foot of the next column.

8. The chart should be precise in execution so as to lend an impression of reliability.

RELATING TO LINE CHARTS

Curves

9. The curve is the most important element of a chart and should have the heaviest weight of line[6] to distinguish it sharply from the background.

10. Ordinarily not more than 3 curves should be shown on the same chart. This limitation does not apply to curves which are similar in shape and well separated.

11. If the curve represents a series of observations, the observed points should be shown, provided that by so doing, additional essential information is given as to the character of the data or as to the reliability of the curve. Observed points should preferably be represented by circles or other closed symbols rather than by crosses. For such symbols a minimum width of line should be used.

Grid Rulings

12. Grid rulings should be limited in number to those necessary to guide the eye for an approximate reading.

Closely spaced grid rulings are appropriate for computation charts, but not for charts prepared merely to show relations.

13. Grid rulings, including boundaries of the grid area, but excluding reference lines, should have the lightest weight of any lines on the chart.

14. Principal lines of reference, such as the zero line, should be made heavier than other rulings, but lighter than the curves.

15. Grid rulings should not run through any lettering on the chart nor through circles representing observed points.

Scales, Scale Captions, and Designations

16. Scales and scale captions should usually be placed at the left and at the bottom of the chart. The scale caption for the vertical scale should, if practicable, be arranged in horizontal lines above the upper end of the scale.

17. The horizontal (independent variable) scale values should usually progress from left to right, and the vertical (dependent variable) scale values from bottom to top.

18. The scale caption should indicate both the quantity measured and the unit of measurement.

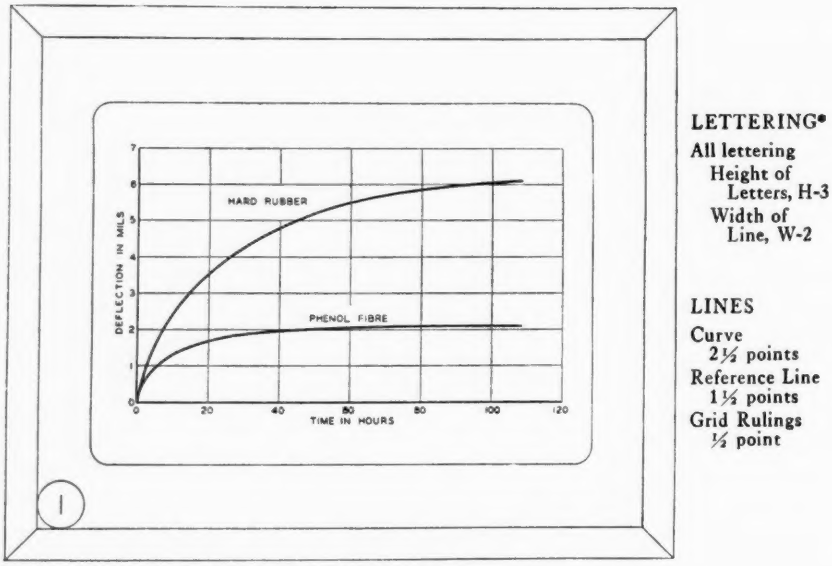
19. For arithmetical scales the scale figures shown on the chart and the space between grid rulings should preferably correspond to 1, 2, or 5 units of measurement, multiplied or divided by 1, 10, 100, etc.

20. Scales should be chosen with a view to making full use of the grid area. When the zero line is a principal standard of reference, it should appear on the chart if its presence clarifies the meaning of the chart.

21. Curves should usually be designated by word-labels placed horizontally close to the curves, rather than by key letters or numbers. When necessary, an arrow can be drawn to connect label and curve.

NOTES

Note 1. Attention is called to the possibilities of using negative slides and colors. Negative slides (white lines on black back-



*See Figures 3 and 4 for meaning of reference letters.

Fig. 1. Exact Size of Horizontal Slide Reduced from Original Chart Measuring 9 x 6⅜ Inches Including Margins

ground) are less fatiguing to the audience and cost less than positives, but should be used only in a thoroughly darkened room. If there is any doubt on this question, it is safer to use positives.

Appropriate use of color increases the effectiveness of slides. If there is any likelihood of publishing the chart, a black and white original should be used and the coloring done by hand on the slide. A colored original satisfactory for making a colored slide by direct color photography must be redrawn in black and white for publication. Colored slides cost more than black and white ones, and the technique is beyond the scope of this brochure.

Note 2. While most publications have their own standards of line widths for engineering charts, the committee finds that the following give results that are representative of good current practice.

(a) Line widths on original chart:

Curves—1½ to 2 points† (depending on nature and number of curves)

Reference Lines—1 point

Grid Rulings—½ point

(See Figure 4 for examples of line widths designated by "points.")

(b) Original charts to be reduced to ½ of original dimensions for use as illustrations for publication (and to ⅓ of original dimensions for use as lantern slides).

Note 3. Although slightly more area is possible with proportions more nearly square, the committee feels that those recommended provide a proper compromise between maximum area, pleasing proportions, opportunity for choice between vertical and horizontal presentation, and use of the same original for a variety of media.

Note 4. The recommended size of lettering and width of line for letters are based on ophthalmological data, actual tests, and an investigation of the conditions under which standard projection equipments are used.

The ratio of the preferred height of letter on the screen to the distance to the farthest spectator is 1/300, that is, 1-inch letter for 25-foot distance, 2-inch letter for 50-foot distance, etc.

The recommendations of Paragraph 5 give this ratio for the following typical conditions: (a) The lens of the projection lantern has a 12-inch focal length. (b) The farthest spectator is at the same distance from the screen as the lantern. (Under average conditions, the lantern is rarely, of necessity, placed closer to the screen than the farthest spectator.)

For these conditions, the width of image of a 3-inch lantern slide opening is equal to ¼ the distance from screen to farthest spectator. For the exceptional case, the following simple calculation gives the preferred size of letter:

Height of letter on slide, in inches =

$$0.040 \times \frac{\text{(distance, farthest spectator to screen)}}{\text{(distance, lantern to screen)}} \times \frac{\text{(focal length of lens, in inches)}}{12}$$

The committee finds further that the recommended size of lettering is just legible to a spectator located at lantern distance from the screen, if a lens of 18-inch focal length is used.

The committee has assembled data indicating that slides made according to the recommended practice of Paragraph 5 are satisfactory in almost all cases.

Note 5. This is easily done by the use of commercial lettering guides and pens provided for this purpose.

In cases where slides must be prepared on short notice, comparable results may be obtained by using pica size typewriter lettering (10 letters to the inch) with an original chart size of 5¼ x 7½ inches and reducing the chart to about 40% of its original dimensions. Although this gives the recommended size of lettering, slides made in this way may be somewhat less legible than those made with the commercial lettering guides, due in part to the lesser blackness and sharpness of line for typewriter lettering.

Note 6. The weight of line for a family of curves may be made

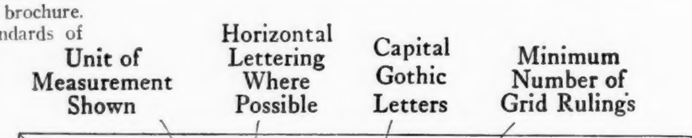


Fig. 2. Exact Size of Vertical Slide Reduced from Original Chart Measuring 9 x 6⅜ Inches Including Margins

†Printer's designation; 1 point = 1/72-inch.

Size of Letters

Designation	*Sample Letters*	*Approx. Height, Inches*
H-1	**A B C D E**	0.175
H-2	**A B C D E**	0.140
H-3	**A B C D E**	0.120

Line Width of Letters

Designation	*Sample Line*	*Approx. Width, Inches*
W-1		0.025
W-2		0.017
W-2		0.017

Fig. 3. Lettering

slightly lighter and for a single curve slightly heavier than 2½ points, the average shown in Figures 1 and 2.

References

"Summary and Report of Joint Committee on Standards for Graphical Presentation" published by the American Society of Mechanical Engineers in December, 1915. Out of print.

Brinton, W. C. "Graphic Methods for Presenting Facts." Engineering Magazine Co., 1914.

Brown, T. H. "Laboratory Handbook of Statistical Methods." McGraw-Hill Book Co., Inc., 1931.

Haskell, A. C. "How to Make and Use Graphic Charts." Codex Book Co., Inc., 1919.

Karsten, K. G. "Charts and Graphs." Prentice-Hall, Inc., 1923.

Riggleman and Frisbee. "Business Statistics." McGraw-Hill Book Co., Inc., 1932.

Lines	*Printer's Designation*	*Width, Inches*
	3 points	0.042
	2½ points	0.035
	2 points	0.028
	1½ points	0.021
	1 point	0.014
	½ point	0.007
o ● △ □	½ point	0.007

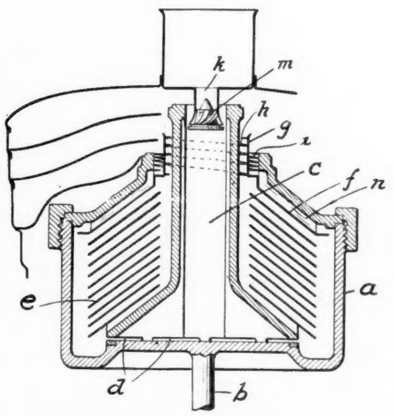
Fig. 4. Line Widths

Treating Latex

OF THE various methods employed for concentrating rubber latex the following recently patented process[1] effects both concentration and purification by means of 2 or 3 centrifugations with washing between.

The object of the method here referred to is to effect the removal in large part of the impurities including the practical elimination of the quebrachitol and to produce a concentrated latex containing a very large proportion of the rubber hydrocarbons.

The construction of the bowl of the centrifuge employed is shown in vertical section in the illustration and is described as follows:



Rubber Latex Centrifuge

The bowl body *a*, supported and driven by a spindle *b*, contains a central tubular shaft or receiving chamber *c*, from which, through a narrow, and more or less complete circular opening *d*, the latex is fed into the separating chamber of the bowl.

This separating chamber contains a "liner" *e*, comprising a number of frusto-conical disks, and held down on the expanded lower end of the tubular shaft *c* by a top disk *f*, which is forced down by wings *n* on the under side of the bowl top. The top disk *f* has an upstanding neck *g*, on the inside of which the lighter separated ingredient is discharged, and on the outside of which the heavier separated ingredient is discharged.

Within the neck *g* is inserted a number of helical guides *h* providing a plurality of helical troughs through which the lighter separated constituent must flow to reach the exit. A similar set of helical guides *i* may be placed in the neck *j* of the bowl to provide outflow channels for the heavier separated constituent.

In the feed tube *k*, through which the mixture to be separated (in this case the original latex) is fed into the receiving chamber *c*, is inserted a plug *m* provided with helical grooves extending around its periphery and through which the incoming latex must flow. The use of these helical grooves greatly accelerates the rate of flow of the latex so that, when it is discharged into the receiving chamber *c*, its angular speed approaches that of the bowl, whereby agitation, emulsification, or churning is very materially reduced.

By using this bowl and carefully adjusting the rate of feed to the speed of the separator one is able in a single separation to make a selective differential separation dividing the original quantity of latex into one phase containing most of the rubber with a relatively small proportion of watery serum and impurities and another phase containing most of the serum and a relatively large proportion of impurities.

It is possible, especially with the use of a separator such as described, to secure a concentration considerably in excess of approximately 60%. It is also possible to secure a concentration as high as 75% or even higher.

[1]U. S. Patent No. 1,885,154, Nov. 1, 1932.

Concentrating Latex

Joseph Rossman, Ph.D.

NORMAL latex contains about ⅔ its weight water; consequently to reduce transportation costs it is necessary to concentrate the latex before shipping it. As a matter of fact until recently the chief obstacle in the way of the commercial applications of latex has been the shipping costs. The development of practical means for transporting latex in bulk and of concentrating it on the plantations has given a great impetus to its direct uses during the last few years.

A number of distinct methods have been developed for concentrating latex involving chemical, physical, and mechanical processes. Latex can be concentrated either by evaporation or by creaming. Each of these methods involves peculiar difficulties due to the characteristics of latex. Creaming can be effected by centrifuging, filtration, dialysis, or by the direct addition of various substances to latex, such as caustic soda. Upon standing for a few hours at 60° or 65° C. the latex separates into 2 layers; the upper contains the concentrated latex. Many substances have been proposed to cause creaming, such as carragheen or Irish moss, gelatin, ammonium alginate, pectins, and mucilages. Concentrated latex prepared by creaming may contain as much as 75% rubber. It is fairly stable and can be redispersed with water.

By using special ceramic filters the rubber can be separated from serum in the latex. Difficulty has been encountered in large scale operation because of clogged pores.

Simple evaporation of fresh latex has also been attempted. The increase of viscosity and denaturizing of the protein have caused difficulties. According to one method latex is evaporated in flat pans heated to 90° C., and hot air-gas mixture at 80 to 90° C. is blown over the surface. Ammonia is added to prevent coagulation.

According to another process latex is strained to remove foreign substances; an alkaline protective colloid is added, and the latex is evaporated in a heated rotating cylinder having an inner eccentric rotating roller dipping into the latex to expose new surfaces of the latex to an air blast. A cream-like mass containing 75% solids is thus obtained.

Centrifuging processes analogous to those for creaming milk have been also applied to latex. By using a separator, rotating 8,000-9,000 revolutions per minute it is possible to concentrate 45 gallons of 30% ammonia preserved latex to 23 gallons of concentrate per hour. The concentrate contains about 60% solids.

The following abstracts give a survey of the United States patents for concentrating latex.[1]

1. Lawrence, 760,459, May 24, 1904. Latex is subjected to combined rubbing and pressure between 2 nested conical members, one of which rotates.

2. Smith, 972,030, Oct. 4, 1910. A centrifugal machine for concentrating latex comprises a bowl having a closed wall; the bowl is fitted with valves which can be opened during the rotation of the bowl to discharge those portions of the latex which are of greater specific gravity than the rubber. A layer of felt, earthenware, or other absorbent material is placed in contact with the walls of the drum, and a layer of canvas or other material lies against this absorbent layer upon which the rubber is collected. When the machine is rotated, the serum passes through the canvas and absorbent layer while the rubber remains on the canvas.

3. McGavack, 1,523,821, Jan. 20, 1925. Latex is concentrated by heating it in a tank, bubbling hot air through the latex, and checking foaming by a blast of air on the surface. The apparatus used is also described in this patent.

4. Hopkinson and Gibbons, 1,542,388, June 1, 1925. (Reissue 16,873 and 16,874, Feb. 7, 1928.) A process for concentrating latex comprises bringing latex into contact with a porous structure impermeable to latex as a whole, but permeable to the water and dissolved constituents therein, depositing a coating on the structure having an uncoagulated rubber content higher than that of the original latex, and removing therefrom the uncoagulated product. According to the process a concentrated uncoagulated dispersion of rubber can be prepared which may contain as high as 80-85% of rubber, and because the porous material permits the exit of the aqueous portion of the latex, this concentrated latex will contain an appreciably lesser amount of non-rubber soluble materials such as soluble nitrogenous matter, inorganic salts, etc., than will be found in an untreated latex.

The process is applied in making articles by dipping an unglazed porcelain form into latex containing approximately 40-50% rubber and allowing it to remain submerged to the proper depth at ordinary room temperature for an interval of time corresponding to the thickness of the rubber desired. Thus 15 or 30 minutes is sufficient for the manufacture of a surgeon's glove. The form is then withdrawn from the liquid, allowed to drip, and the rubber thereon is dried at room temperature or at a slightly higher temperature.

The withdrawal of water from the mass of latex adjacent the form is effected through the pores of the porous material and causes a segregation or collection of thickened latex adhering to the form. This withdrawal of water occurs toward the interior of the form while the latter is immersed, and upon withdrawal of the form elimination of water from the adherent mass takes place not only toward the interior but also by ordinary exterior evaporation. The drying of the glove which has a thickness when dry of 0.012-inch requires approximately one hour. The glove so produced is vulcanized preferably by dipping into the following solution: benzol 100 parts by weight, zinc butyl xanthogenate 3 parts by weight, dibenzylamine 3 parts by weight, and sulphur 1 part by weight.

5. Wescott, 1,630,411, May 31, 1927. Latex is introduced into a rapidly rotating centrifugal machine so as to pick up speed without any great agitation and to form a "wall" of concentrated emulsion. This wall then is washed with liquid containing an alkali or a protective colloid so as to remove the natural water soluble bodies and is next discharged with avoidance of agitation which might produce coagulation; the discharge is collected in sprayed form in an evaporating chamber.

6. Wescott, 1,630,412, May 31, 1927. A centrifugal

Editor's Note: This article was received from the author on May 26, 1932.

[1]For a survey of foreign patents see: Aladin, "Latex, Konservierung und Koncentration," *Gummi-Ztg.*, 43, 1047-49, 1105-106 (1929); R. Ditmar, "Ueber Latex-Konzentrate," *Caoutchouc & gutta-percha*, 28, 15607-608 (1931); J. H. Carrington, "Uses of Concentrated Latex," *Trans. Inst. Rubber Ind.*, 6, 438-52 (1931).

machine for concentrating latex comprises a rotor, means for rotating it, means for feeding liquid material into the rotor to cause it to assume gradual rotational motion without substantial agitation, means for delivering a washing liquid to the concentric liquid layers within the rotor, means for discharging heavy liquid and washing liquid, and means for separately discharging separated light liquid without substantial agitation in such way that it is gradually deprived of its rotational velocity.

7. Hopkinson and Gibbons, 1,632,759, June 14, 1927. This invention consists in filtering latex, ammonia preserved, to remove the serum and water soluble non-rubber constituents from the latex without coagulation of the rubber on the latex. The latex is also treated to increase the rate of deposition of the rubber particles on a filtering medium.

Certain of the organic colloids or protective agents, notably Irish moss, gum tragacanth, salep root, gum arabic, and others of the same general type may be employed to increase the filterability of latex. With fresh latex, and with some compounded latex, or vulcanized latex, the alkaline earth hydroxides exert a similar effect of increasing the filterability. Clay and other similar hydrophilic minerals may be used to advantage. The same may be accomplished by using pectin bodies.

As specific illustrations, the following are given. Latex containing 30-35% solids is treated with a solution of calcium polysulphide to give 0.34-part by weight of solid calcium polysulphide per 100 parts by weight of latex. If a porous form be dipped into this treated latex for 5 minutes and then allowed to dry, the actual weight of rubber deposited will be approximately twice as much as the deposit formed in the same time without calcium polysulphide. The salts of other bivalent metals such as zinc and of trivalent metals such as aluminum may also be utilized.

If desired, the latex may be mixed with compounding ingredients with or without vulcanizing combinations, and the latex may or may not be vulcanized prior to the washing treatment. As an example of a vulcanized latex, the following may be employed: preserved latex containing 35% of rubber 100 parts, zinc oxide XX brand 2 parts, precipitated sulphur 2 parts, oxy normal butyl thiocarbonic acid disulphide (from an emulsion) 1 part, dibenzylamine (from an emulsion), ½ part, glue (from an emulsion) also added separately 2½ parts, solvent naphtha (from an emulsion) 3 parts. This latex will vulcanize upon standing one or 2 weeks, and the vulcanized latex may be placed in a container fitted with a filtering medium such as the single-ply fire hose fabric. The filtration may be accelerated by the use of a stirrer set at a slight distance from the filtering disk. The serum runs clear after a minute or 2, and the rubber remains in the container. Additional water may be added, and the process conducted as a continuous or discontinuous filtration until the filtrate shows substantially no water soluble material.

With the above vulcanized latex, filtered under 20 pounds' pressure, the serum or filtrate comes through at 2 different rates, the faster rate being observed until the rubber on the upper side of the filtering disk comes in contact with the stirring apparatus. After this contact occurs, the rate of filtration remains approximately constant. With a stirrer set at 0.019-inch from the filtering disk, the above vulcanized latex filters at the rate of 12.24 gallons per square foot of filtering surface per 24 hours; this rate is the constant rate obtained after the rubber on the filtering disk has accumulated to a thickness of 0.019-inch, that is until it has reached the stirrer.

Instead of employing what may be styled a gravity filtration, or a filtration under direct pressure, a centrifugal filtration may be used. In this instance the so-called basket centrifuge may be utilized to good advantage. By making the basket lining of porous material such as earthenware or similar material, the process may be advantageously carried out. A suitable fabric basket lining may also be used, as for example a lining of fabric similar to single-ply fire hose fabric. In the case of centrifugal filtration, the filtration necessarily proceeds under some pressure, the pressure of course varying with the speed of the centrifuge. In general the pressure may be increased in the centrifuge as in the previous example, the upper limit being dependent upon the filtering medium, the exact limitation being the point where the rubber particles themselves begin to force through the filter. With centrifugal filtration additional water together with preservative materials as required may be introduced to repeat the washing process.

The example of vulcanized latex given above will deposit a film 0.042-inch thick in 5 minutes, as compared with 0.003 for ordinary preserved latex in the same length of time.

A mixture of 150 cc. of approximately 35% latex and 8.5 grams of a 3.4% Irish moss gel will give a film approximately 0.010-inch thick in 5 minutes, immediately after preparation. After standing over night the same mixture will give in the same length of time a deposit of 0.020-inch.

Certain compounding ingredients exert a similar effect upon the filterability. It appears that the rubber and the filler are deposited upon a porous form in approximately the same proportions in which they are found in the mixture. A mixture containing 100 parts by weight of rubber as latex, 100 of gilders whiting, and 50 of water will give a dry film 0.009-inch thick after a 5-minute dip. A mixture of 100 parts by weight of rubber as latex, 100 gilders whiting, 50 mineral flour, and 100 water will give a dry film 0.014-inch thick after a 5-minute dip. A composition containing 100 of rubber as latex, 100 gilders whiting, 100 mineral flour, and 150 water will give a dry film 0.020-inch thick after a 5-minute dip. From these 3 examples it can readily be seen that the mineral flour has acted to increase the filterability of the compositions, as evidenced by the increased speed of deposit upon the porous form.

To illustrate increasing filterability by increasing the hydrogen ion concentration, an acid buffer solution of hydrated primary and secondary sodium phosphates may be used, or a suitable quantity of a strong base such as sodium hydroxide may be utilized.

By a repetition of the filtration and washing, substantially all the water soluble ingredients are removed. For some purposes it is desirable to remove not only the water soluble non-rubbers, but also the water insoluble materials normally present in rubber latex. Considering first the insoluble nitrogenous matter, this may be removed by first digesting with a proteolytic enzyme such as papain or trypsin and then washing with fresh water according to any of the above methods. The resins are not affected, except to a very small degree by the above washing process. The resins may be removed, if desired, by an extraction process which may be carried out upon the recovered washed rubber particles. Under proper conditions the resins may be removed, if desired, but it will be found more advantageous to reduce the uncoagulated nitrogen-free rubber to a finely divided dry product such as that obtained by spraying latex. This finely divided spongy product lends itself readily to extraction with a resin solvent as, for example, acetone.

The product obtained from all of the above treatment is in an uncoagulated state and contains practically no water-soluble non-rubber constituents and at the same time has all the strength of an unmilled rubber, in much the same form as it occurred in the original latex. The product, when dried, is practically transparent, that is in cases where no compounding ingredients have been added prior to the washing. The washed rubber particles dispersed in water may be employed for any dipping, spreading, or coating operation, or the dispersion may be compounded after the washing treatment to give a compound latex, a vulcanized latex, or

a vulcanizable latex composition which may be used in substantially the same manner as a similar latex composition made with unwashed latex.

8. Gibbons and Shepard, 1,651,764, Dec. 6, 1927. The process of concentrating latex consists in heating the latex, withdrawing moisture by passing a heated gas over its surface, continuously agitating the surface by stirrers, maintaining the temperature of the latex substantially constant for a portion of the operation, and thereafter gradually reducing the temperature of the latex as the concentration increases.

9. Petersen, 1,670,900, May 22, 1928. Many difficulties have been met in concentrating rubber latex. If latex is evaporated in the ordinary way, a skin is formed which impedes the evaporation of the water from the latex and results in loss of material. When agitating means such as stirrers are used to prevent the formation of a skin, coagulation may still occur on the arms of the stirrer and also at any points where there is friction. When a high concentration has been reached, it is difficult to remove the product from the arms of the stirrer, and the increase of viscosity with concentration results in losses owing to skin formation during the latter stages of the process.

When ammonia preserved latex is being concentrated, considerable foaming usually occurs. The foam fills up the space above the liquid; this action again delays evaporation, and further losses may be caused by the foam carried away by the evaporated water entering the exhaust conduits.

Various methods have been used to overcome these difficulties. For example, a drying gas has been blown through the latex, and currents of air have been used to prevent the formation of foam. These methods, however, require complicated apparatus and constant attention. According to this patent, latex is concentrated in a hollow drum rotating around its longitudinal axis. The drum is heated from the outside by a hot water or steam jacket while a drying medium passes through the drum.

During the rotation of the drum a thin layer of latex is carried round on its inner surface, the moisture from which is partially removed by hot air passing through the drum. The layer of latex from which the water has been partially removed returns to the bulk of the latex at the bottom of the drum, and the new layer which is always being formed, continually exposes a fresh surface of latex to the action of a stream of hot air.

The high viscosity of concentrated latex tends to prevent uniform concentration, and the exposed surface of the thin layer of latex consequently is more concentrated than the inner part of the layer. It is therefore very important to remove the layer completely from the rotating surface and to mix it well with the bulk of the latex. This mixing is effected by using a spreading arrangement that consists of a roller adapted to rotate freely. This roller is fixed to provide a suitable distance between it and the rotating surface, or the roller may be free and bear by its own weight against the rotating surface, in which case the distance between the roller and the rotating surface will be automatically controlled by the viscosity of the latex.

The concentration is continued until the required concentration or consistency of the product is obtained.

For example, when using latex that has been stabilized with a protective colloid it is possible to continue the evaporating operation until a thick paste has been obtained containing less than 20% of water, the entire product being secured in a form that can be reconverted into the original latex by adding water and which is free from any coagulated matter whatever.

10. McGavack, 1,740,994, Dec. 24, 1929. To ordinary rubber latex containing a small percentage of ammonia to prevent coagulation, is added a small amount of ammonium alginate in solution, to the extent of 0.2-part of solid alginate to 100 parts of rubber in the form of latex. The alginate may be added as a 5% solution and thoroughly stirred into latex. After standing for some time a sharp separation into layers occurs.

11. Wescott, 1,754,535, Apr. 15, 1930. The latex to be treated is first freed of finely divided coagula (cream), all particles coarser than 4 or 5μ in average diameter being removed by a special preliminary centrifugal treatment. The latex then is treated with a reagent accelerating centrifugal separation such as dissolved carragheen, and the treated latex is then concentrated by centrifuging, following the process of patent No. 1,816,242. While still under the influence of an intense centrifugal force, the residual aqueous fluid in the concentrate is modified or replaced by an alkaline solution of a protective colloid, without substantial dilution of the concentrate, whereby the concentrate is stabilized, and the accelerating reagent is removed or its effects annulled.

12. Traube, 1,754,842, Apr. 15, 1930. Latex is creamed by the addition of organic colloids such as carragheen moss, Iceland moss, or vegetable mucilages. The following examples are given. (1) To 100 liters of fresh latex is added the extract made by heating 140 grams of carragheen moss with 14 liters of water and straining the solution. After stirring, the latex is left at rest for some hours or longer at 50-60° C., during which time 2 layers are formed, the upper one containing practically all the rubber substance which bears to the water in the layer about twice the proportion that it had in the original latex. (2) A jelly made by heating 100-200 grams of gelatin with 1 liter of water is allowed to cool, and upon it is poured 1 liter of latex cream. Preferably freshly prepared latex cream is used. After one or more hours a cake of rubber can be lifted from the gelatin. (3) One liter of latex cream, prepared according to the present invention, for instance according to Example 1, and of 50-60% strength is mixed with 300 grams of calcium carbonate and about 100 grams of sulphur. This mixture is dried by leading warm gases through it or by application to gelatin as described in Example 2, and the plate thus formed is vulcanized in the known manner.

13. Banks, 1,755,379, Apr. 22, 1930. Latex is creamed by adding gelatin or gum arabic. The creaming operation may be repeated if desired.

14. Hazell, 1,757,632, May 6, 1930. Stabilized latex is creamed by adding a solution of sodium hypochlorite and stirring. The action of the hypochlorite may be checked by the addition of an antichlor, e.g., sodium thiosulphate or an equivalent in an amount sufficient to react completely with the unchanged hypochlorite. The addition of the sodium thiosulphate also promotes creaming of the latex.

(To be continued)

Paving Mixture

THE resins extracted from gutta percha and balata in the process of preparing these materials for manufacturing are utilized in the preparation of a composition for binding road pavement.[1] The composition consists of bituminous mixture containing finely divided clay colloidally dispersed, 92 parts by weight, and gutta percha pitch, 8 parts by weight. The latter ingredient is a rubber-like pitch. The mixtures prepared according to the invention are valuable for road surfacing because they are adhesive and do not peel off or separate from stone or other materials when cold. They have superior binding power, do not sweat, harden, polish, become brittle or slippery. These properties remain unchanged indefinitely and are unaltered by exposure to the weather. Other advantages claimed are that roads constructed with the mixtures are more durable, less liable to wave formation, do not break up, and cost less for maintenance and repair.

[1] U. S. Patent No. 1,872,112, Aug. 16, 1932.

Cutting Production Costs

Practical Suggestions on Applying Incentives in Representative Departments and Processes of a Reclaiming Plant

Ernest F. Thayer

THE following data conclude the very helpful and informative article on cutting production costs, begun in our January issue.

Refining Operations

Little need exists of an incentive plan on refining machines as they can produce only a certain amount of stock of a given quality. The rolls are set so closely together that they must be kept full of stock at all times or they may become scored and seriously damaged. Therefore the operator must keep them producing at capacity whether he has an incentive to spur him on or not. About the only thing that can be done in the way of labor cost reduction is to determine how many refiners a man can satisfactorily tend and assign him to them. A sliding hour wage scale may be used which pays an hourly rate depending upon the number of machines tended. That is, when 2 refiners are tended, the operator will receive perhaps 35¢ an hour; 3 machines 40¢ an hour; 4 machines 45¢, etc. This schedule will influence him to tend as many machines as possible and increase his earnings accordingly. In years past one man for each machine was thought necessary, but experience has shown that one man can well handle 4 machines.

Straining Refined Stock

A sliding hourly wage scale based on the number of refiners from which the stock is strained usually is the best way to handle refined stock. Thus for straining the output of 2 refiners the strainer man would receive about 35¢ an hour; 3 refiners 38¢; 4 refiners 42¢, etc. This method requires no time studies and induces labor to strain from as many refiners as possible, thereby assuring maximum production. As in the case of the refiners, the number of pounds strained per man increases considerably whenever this scheme is used.

Tight Milling, Sheeting, Drumming, Etc.

A good type of bonus scheme is usually best for tight milling, etc. The first requisite, of course, is that the stock be properly mixed before being cut off the rolls. Piece work would not accomplish this result, as the tendency would be for the workers to take off the stock before it is ready and thus put an extra burden on subsequent operations. A bonus method which offers a premium of a certain amount per 100 pounds for stock in excess of a specified quantity is much more satisfactory. Even this plan does not insure proper mixing, but as it guarantees the operatives their base rate, with an opportunity to increase their earnings by producing more, provided the quality is not lessened, it is about the one feasible chance to increase production.

Time studies should be made to determine the maximum good quality production possible on each type of stock. The amount required before the bonus starts should be about 80% of this figure. The 20% balance should be the bonus bearing quantity. For example, if a certain tight mill on tire stock can produce a maximum of 350 pounds per hour, the required base amount should be about 280 pounds per hour. If a bonus of 5¢ per 100 is paid on stock run in excess of the base figure, the operative can earn 3½¢ extra per hour by keeping up to the 350-pound rate.

Compounding and Banbury Mixing Department

When the Banbury masticator is in the same room or very close to the place where the batches for it are weighed out and assembled, the complete operation should be placed together under one form of incentive. The production of the mixing machine is the determining factor in the department, for the speed at which it mixes the different batches of stock regulates the number of batches to be compounded. Usually this work is not adaptable to piece work for 2 reasons: first, because the ingredients are stored and obtained from widely separated points; and second, because in a plant of any size an enormous number of piece rates are necessary to cover every type of stock used. That is, a slight change in the compound formula might mean extra weighing requiring 3 or 4 minutes more work on the batch, thereby necessitating a new piece rate. Where perhaps 100 or more active compounds are made and each of which is being constantly changed, innumerable time studies and rate changes would be required during the year.

A better way to handle this department is to limit the size of the crew necessary to take care of all the weighing and mixing of the compounds, paying them a bonus on the number of hours the mixer runs on the stock they are putting up. If one mixer runs 22 hours a day on 15-minute batches, 3 men can easily compound these 88 batches in 10 hours. They may be paid a bonus of 2¢ an hour for the hours the Banbury runs, thereby receiving a bonus of 44¢ a day over their regular wage. This method will eliminate a man or 2, as otherwise there would be a day and night crew of at least 2 men each putting up batches.

The Banbury operators should also have some type of incentive to influence them to dump and reload the mixer in the shortest time possible. If the mixer is allowed to run idle 2 or 3 minutes between each batch, a serious loss is incurred. This changing time should not be more than ½ to 1 minute in duration. A bonus paid on the actual time is best for this job. It may be based on the increase in the mixing minutes or the decrease in the idle changing time minutes. As the stock usually has no uniform length of time in which it should stay in the machine to be masticated properly, nothing can be done to speed up the actual mixing without incurring the danger of improperly mixed stock. The above method, however, will do much to eliminate idle time on the machine and thereby increase its output without injury to the quality of the product. The record of the idle minutes may be easily obtained from the charts of the Banbury automatic temperature recorder.

Miscellaneous Jobs

The following are a few odd jobs performed more or less intermittently to which straight piece work may be applied with good results.

1. Removing cases from baled crude rubber and cleaning preparatory to cutting; 1-man crew. Rate based at so much per bale.
2. Cutting bales of crude in cutting machine; 1-man crew. Rate based at so much per bale.
3. Opening and cracking drums of hard mineral rubber; 1-man crew. Rate based at so much per drum. Job to include opening drum, running through cracking machine, and delivering the cracked material to storage bins.
4. Opening and cracking bags of Montan wax. Handled in the same manner as the mineral rubber.
5. Bagging ground stock for shipment; 1-man crew. Rates based on pounds of rubber bagged rather than on bags filled. This policy will insure the bags being filled to capacity and thereby reduce the number of bags used.

Bonus Scheme for Supervisors and Foremen

It is usually good practice where a piece-work system is in effect to provide also an incentive for the foremen in charge of the work. Many plants have such schemes based on various methods of payment. Some pay the foremen a bonus on the pounds produced; some on the basis of the amount of cost reduction; others on the amount of profit made, etc. The idea of all of them, of course, is to interest the foremen in increasing production and reducing costs. The trouble with most schemes, however, is the difficulty in determining just how much of the increase in production or reduction in cost the foreman is responsible for. Also it is sometimes a stupendous job to obtain the figures that will give the proper information with which to compute the amount of bonus due. For example, it might be hard to determine accurately how much a certain cost had been reduced and how much bonus should be paid the foreman because of this reduction.

A much simpler method, and one that entails a comparatively small amount of clerical work but which, nevertheless, accomplishes all the results desired, is a foremen's bonus based upon the number of piece-work hours worked in each department. The primary function of such a scheme is not to increase the earnings of the foremen. Its first duty is to replace day-work hours with piece-work hours. The management, however, instead of demanding that the foremen accomplish this without any recompense, is willing to reward the foremen for their efforts. Such a scheme will tend to reduce the idle time spent around the departments during the day. It will induce the foremen to get all the work done on piece work that is possible with the resultant reductions in costs and increases in production. Some foremen, of course, will not be able to increase their piece-work hours so much as others are able to do. Possibly their work is not so applicable to piece work, or they have more interruptions which require added day-work hours. In any case, however, the urge is there for them to eliminate as much day work as possible and benefit themselves accordingly. They will look around their rooms and scrutinize the piece-work possibilities of each job closely and will surprise everybody as well as themselves at the number of jobs they find can be put on some form of incentive, before thought impossible.

Such a scheme works hand in hand with the type of suggested incentives noted above and completes the piece-work program.

A Simple Planimeter

A SIMPLE planimeter for measuring the area of diagrams that may be of use in rubber testing laboratories was recently described[1]. Although old, this device is not generally known. The instrument is nothing more than an ordinary pocket knife with 2 blades arranged as in Figure 1. One of the blades is completely opened to form an extension of the body of the knife. The second blade, P, opens half way, forming a right angle with the body of the knife. This pivot, P, need not necessarily be a blade point. It may be the pointed end of a nail file or any other similar accessory in certain knives.

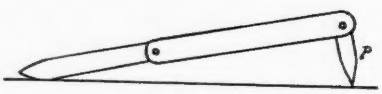


Fig. 1. Penknife Planimeter

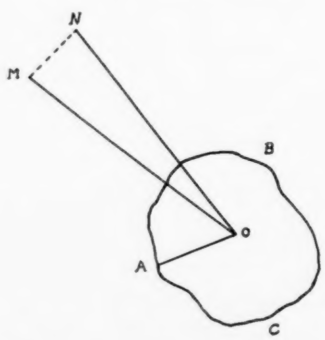


Fig. 2. Application of Penknife Planimeter

In determining the area enclosed by a curve, such as shown in Figure 2, its center, located very approximately, is joined by a straight line to any point on the curve. The pivot, P, of the knife is placed at the center of the curve; the blade occupies any position, resting either on the paper bearing the outline of the curve or on a separate sheet of paper suitably arranged. The open blade is lightly pressed so as to leave an impression of its position on the paper. Then the pivot, P, is allowed to travel first from the center O to the curve at A, then along the length of the curve, and finally back to the center O.

After traversing the curve in this way the blade is again pressed, thus fixing on the paper its final position. During the entire distance traveled the pivot must be lightly guided between the thumb and forefinger so that the portion of the curve traced may always be tangent to the position of the blade. In other words there should never be lateral displacement of the blade; in fact the blade generally opposes any displacement of that kind.

In detail to find the area of the curve ABC in Figure 2, let OM be the initial position of the knife. The pivot starting at O is made to travel through $OABCAO$. Let ON be the final position of the knife. The area of the curve is expressed by the product $MN \times MO$.

The accuracy of the method depends on the relation between the length of the knife and the greatest length of the area of the curve.

To obtain a more exact result a second tracing is made around the curve in the reverse direction, that is via $OACBAO$. Let ON' be the new final position, not shown in the figure. Then the revised area of the curve will be found thus: $MN + MN' \div 2 \times MO$.

The theory of the apparatus is explained in the original paper[2].

[1] A. D. Luttringer, *Caoutchouc & gutta-percha*, Sept. 15, 1932, pp. 16125-26.

[2] *J. Franklin Inst.*, 213, 661, June, 1932.

R. M. A. Dinner

THE Thirty-third annual dinner of The Rubber Manufacturers Association, Inc., was held in the Roof Ballroom of the Hotel Waldorf-Astoria, New York, N. Y., the evening of January 9, 1933, attended by 350 members and guests.

The program consisted of an interesting talk on finance and the gold standard by Dr. Benjamin M. Anderson, Jr., economist of the Chase National Bank, and dinner music by The Waldorf-Astoria Orchestra. James D. Tew, retiring president of the association and president of The B. F. Goodrich Co., was toastmaster. W. H. Lalley, president, Kelly-Springfield Tire Co.; Geo. B. Dryden, president, Dryden Rubber Co.; and W. O. Rutherford, president, Pennsylvania Rubber Co. of America, Inc.; formed the dinner committee.

W. H. Lalley
First Vice President

At the President's Table sat Messrs. Tew, Lalley, Dryden, Rutherford, and Anderson; F. B. Davis, Jr., president, United States Rubber Co.; Martin J. Barry, president, National Tire Dealers Association; J. C. Weston, former president, Rubber Association of America; A. J. Scaife, of the Society of Automotive Engineers; Herbert E. Smith, U. S. Rubber vice president; A. B. Newhall, president, Hood Rubber Products Co., Inc.; William O'Neil, president, General Tire & Rubber Co.; Paul W. Litchfield, president, Goodyear Tire & Rubber Co.; George T. Bishop, chairman of the board, Continental Shares Corp.; D. M. Goodrich, chairman of the Goodrich board; A. J. Brosseau, vice president, National Automotive Chamber of Commerce; C. Slusser, Goodyear vice president; J. W. Thomas, president, Firestone Tire & Rubber Co.; C. D. Garretson, president, Electric Hose & Rubber Co.; Frederick A. Warren, president, Gutta Percha & Rubber, Ltd., and Rubber Association of Canada; and Charles Slaughter, president, The Rubber Exchange of New York, Inc.

Underwood & Underwood Studios

F. B. Davis, Jr., President

Annual Meeting

At the eighteenth annual meeting of The Rubber Manufacturers Association where only routine business was transacted, held in the Assembly Rooms of the Waldorf, Monday morning, January 9, the following officers were elected: president, F. B. Davis, Jr.; first vice president, W. H. Lalley; second vice president, Geo. B. Dryden; secretary, R. H. Goebel; treasurer, H. B. Delapierre (reelected), Kelly-Springfield; and assistant treasurer, W. H. Blackwell (reelected).

G. B. Dryden
Second Vice President

The Executive Committee for 1933 is comprised of Messrs. Davis, Lalley, Dryden, Tew, and Slusser, and A. F. Townsend, chairman of the board, Manhattan Rubber Manufacturing Division of Raybestos-Manhattan, Inc.

Assistant secretaries reelected for 1933 are George Flint, A. C. Grimley, and C. W. Halligan. A. L. Viles, who has

(*Continued on page 64*)

Drucker & Baltes

EDITORIALS

Haemoglobin in Rubber

SEARCHING through back numbers of INDIA RUBBER WORLD in quest of information with respect to the attachment of rubber to metal, an interesting disclosure was made. It appeared in our issue of November 15, 1889, and reads as follows:

"A letter came to us this week that took us back some years when the wringer-roll business was in its infancy, and when as a boy we worked under a foreman, whom we then thought to be one of the best equipped of any in the business. He is old now, and not over-rich, and he writes: 'Can't you get me a place in some factory where they make a specialty of sticking rubber to iron? You know that is my hobby.' Yes, we know it is his hobby, and the memory of the manner in which he did it comes back with a rush of pity. His hobby was blood! We hasten to explain, lest the reader think our wits have suddenly flown. After the shaft had been cleaned and polished with powdered pumice-stone, it was rubbed over with a piece of raw liver, allowed to dry, and then covered with rubber and vulcanized. . . . Yes, that was his hobby, but the 'wrinkles' that have been made the subject of patents and patent fights, and that really stick the rubber every time to the iron—all these are a sealed book to him, and he takes no stock in them. If you were to talk to him of blue vitriol, of chemical combinations, or the like, he would turn away in disgust and demand blood."

Employment: Assurance and Insurance

AT A recent meeting of the American Association for the Advancement of Science, Gerard Swope, president of the General Electric Co., presented an address on the fundamental principles to be observed in effecting the eventual stabilization of employment.

In summing up the arguments in support of his plan the following requirements were given:

"First, we must decide in what volume and what kind of products we want industry to supply and how to have industry organized to be of service.

"Second, we must secure for workers in industry an assurance of minimum employment per year, at compensation adequate to enable them to live in accordance with a standard of living that we want to maintain and can maintain, with the requirement that the employes themselves analyze, understand, and accept their responsibilities and contribute toward the solution of the problem by laying aside a certain portion of their earnings for accident, invalidity, and death, for old-age retirement, and for periods of cessation of work if they come.

"Third, where we have not advanced far enough to be able to give an assurance of employment, unemployment reserves should be built up and maintained as a separate reserve by each unit.

"Fourth, every individual who has worked with his company a certain minimum length of time to qualify as a recipient of such benefits and who receives less than a specified annual compensation, shall contribute towards its cost and share in its administration.

"Fifth, the employer should contribute to the unemployment reserves not less than the amount contributed by the employes.

"Sixth, to have a minimum waiting period before such benefits become effective.

"Seventh, to have the minimum of such benefits adequate to provide for food, shelter, and clothing.

"Eighth, to provide such benefits over a sufficiently long period, without calling on the state or society for relief or charity.

"Ninth, make provision for such unemployment emergencies as may transcend the usual periods of unemployment, which cannot be met by the regular unemployment reserves, by calling on all other employes of that particular organization for contributions and also on the employer for similar contributions.

"If these things are done, either as a result of encouragement of industry by the state, or, if that is found inadequate, by legislation, we will find that the best brains of employer and employe will be directed toward a solution of these pressing and human problems, which must be solved."

Faith in Machine Age

TECHNOCRACY with its horde of questionable statistics and scientific jargon presents startling conclusions, but without supporting facts. However industrial leaders in general have gone on record in expressing faith that the machine age will end depression. Far sighted corporations will continue to follow the principle of improved production methods. Research, invention, and the development of labor-saving machinery are of more importance today than ever before.

What the Rubber Chemists Are Doing

Temperature Coefficient of Vulcanization[1]

C. R. Park and R. B. Maxwell[2]

DATA accumulated over a considerable period have indicated that, when employing certain accelerators, the temperature coefficient of vulcanization is not the same as when a rubber-sulphur mix is used. The values obtained in the past have been subjected to considerable criticism, and curing results from tires have indicated that the values commonly used for stocks containing mercaptobenzothiazole were too high. The values used have varied for different experimenters between 1.45 and 1.60 per 10° F., or 1.94 to 2.35 per 10° C.

[1]*Ind. Eng. Chem.*, Feb., 1932. 148-51. Presented before the Division of Rubber Chemistry at the 82nd Meeting of the A. C. S., Buffalo, N. Y., Aug. 31 to Sept. 4, 1931.

[2] The Goodyear Tire & Rubber Co., Akron, O.

In some quarters it seems to have been the practice to use the same temperature coefficient regardless of the type of mix or type of accelerator employed. The present experimental work was conducted with the purpose of determining more accurately the value of the temperature coefficient for mercaptobenzothiazole mixes.

Conclusions

The temperature of the inside of a rubber article during vulcanization is much lower than that of the outside because of the low heat conductivity of rubber compounds. Since the curing intensity depends upon the temperature, the cure of the inside of the article is often widely different from that of the outside. In order to evaluate the cure, it is necessary to know accurately how curing intensity varies with temperature. Satisfactory data for mercaptobenzothiazole stocks have been lacking.

The temperature coefficients have been determined for mercaptobenzothiazole mixes and for a mix accelerated by a crotonaldehyde-aniline condensation product. Special care was taken to eliminate errors in temperature regulation, etc., by the use of thermocouples in the samples during cure. The values derived from modulus and combined-sulphur data were found to be 1.91 and 2.30 (av.), respectively, for mercaptobenzothiazole; and 2.32 and 2.67, respectively, for crotonaldehyde-aniline.

A. C. S. Activities

Chicago Group

THE Chicago Group meeting of the Rubber Division, American Chemical Society, held January 13, 1933, in the College Inn of the Hotel Sherman, Chicago, Ill., was broadcast throughout the Midwest. The Ben Bernie Orchestra provided the musical entertainment. The Inn was reserved for the members of the group, and an excellent dinner was served between the entertainment features.

After the dinner the company adjourned to the Crystal Ballroom, where the technical part of the program was held. The first feature of this was an illustrated talk by Harlan A. Depew, of the American Zinc Sales Co., on zinc oxide. He described the American and French processes for its manufacture and explained their physical characteristics and the advantages and disadvantages of each type. The illustrations included a diagrammatic plan of a zinc oxide plant and also photographs of actual plant buildings in which zinc oxide manufacture is conducted.

Another feature of the program was a movie travelogue entitled "See 'Em Alive in the Wilds of Africa," presented by Eastman Dryden, of Commercial Printing Machine, Inc. This embraced thrilling views of wild life such as lions and other large game feeding on their prey. These were not typical hunting pictures, but were taken by skilled photographers directed by trained African hunters.

At the close of the meeting the Program Committee announced that plans are practically completed for the next meeting to be held in March.

A. C. S. President

DR. CHARLES L. REESE, retired chemical director of E. I. du Pont de Nemours & Co., Inc., Wilmington, Del., has been elected president of the American Chemical Society for 1934. Prof. Arthur B. Lamb, of Harvard University, became president of the society on January 1 and will serve throughout 1933.

Annual Meeting A. C. S.

THE Eighty-fifth Meeting of the American Chemical Society will be held in Washington, D. C., March 26 to 31, 1933.

The Registration Bureau of the convention will open at 4 p. m., Sunday afternoon, in the Willard Hotel and will continue there Monday, Tuesday, and Wednesday. The convention registration fee, required by vote of the Council to help carry local expenses, has been fixed at $3 for members and guests other than American non-member chemists; $8 for American non-member chemists. All members and guests must register to help carry the expense of the meeting.

The Division of Rubber Chemistry will hold 2 sessions as usual. Its meetings will be in the Raleigh Hotel.

Mixed Accelerators

CURING rubber by employing mixtures of accelerators has recently been patented.[1] These mixtures comprise an accelerator of weakly acid nature with one of basic nature, each of which is relatively slow acting in the early stages of the cure, but is particularly active later in the cure. Mercapto-benzo-thiazole-disulphide is a mild accelerator of the vulcanizing process particularly during the early stages of the cure. Diphenyl-guanidine is an accelerator of basic nature, which is also relatively slow in exerting accelerating action in the cure. Mixtures of these 2 accelerators as well as mixtures of other basic compounds with thiazole-disulphides accelerate the vulcanizing step much more vigorously in the early stages of the cure and produce a vulcanized product at full cure that possesses much more desirable physical and commercial characteristics than do any of the components of the mixture when used separately in a rubber mix.

[1]U. S. Patent No. 1,893,846, Jan. 10, 1933.

Studies in the Vulcanization of Rubber[1]

V. Dielectric Constant and Power Factor of Vulcanized Rubber

Donald W. Kitchin[2]

THIS paper deals with 2 important dielectric properties of vulcanized rubber —dielectric constant and power factor. Data are given for samples containing from 2 to 32% sulphur tested at 30°, 50°, 75°, and 100° C. at frequencies from 600 to 2,000,000 cycles. These electrical properties vary greatly with composition, frequency, and temperature. The dielectric behavior has been interpreted in previous papers on the basis of polar molecules. In this paper it is shown that this theory, as originally applied to rubber, requires some modification. The results do not disprove a dipole mechanism, but they do show that the low dielectric constant and power factor of hard rubber at room temperature, which led to the belief that addition of sulphur to all the double bonds gave a balanced molecule, are really due to its rigidity, which so retards the electrical response that the period of charge or discharge is 24 hours or more. At higher temperatures hard rubber softens, the period becomes short, and dielectric constant and power factor are high.

Studies of the compressibility and thermal expansion of vulcanized rubber have revealed 2 states with a fairly sharp transition temperature: a hard state in which rubber resembles a solid, and a soft state in which it exhibits properties of a viscous liquid. The dielectric behavior also is greatly influenced by this transition and in a manner which gives additional support to the concept of soft rubber as a liquid.

It is shown that the agents producing the electrical effects are not identical, but possess widely different relaxation times. Preliminary tests show that the power factor of a vulcanized rubber sheet decreases on stretch. None of the data makes it possible to determine the actual mechanism of the electrical behavior.

[1] *Ind. Eng. Chem.*, May, 1932, 549-55. Presented before the Division of Rubber Chemistry of the A. C. S., Detroit, Mich., Feb. 25-26, 1932.
[2] Simplex Wire & Cable Co., Boston, Mass.

Oenslager, Perkin 1933 Medalist

THE 1933 Perkin medal of the Society of Chemical Industry was presented to George Oenslager, chief research chemist for The B. F. Goodrich Co., Akron, O., at a meeting of chemists held in New York, N. Y., on January 6, 1933.

Harlan L. Trumbull, manager of the chemical research laboratories of the Goodrich company, reviewed the accomplishments of the medalist in an address on the importance of accelerators, in which he discussed their economic advantages and summarized their technical value as follows:

1. Products of high tensile strength, favored by low temperature and short time of vulcanization.
2. Greater uniformity of physical properties throughout thick masses of rubber.
3. A more precise control of the product.
4. A wider range of physical properties, promoting a more extensive use of rubber articles.
5. Greatly retarded deterioration on aging.
6. Improvement in resistance to deterioration at high temperatures.
7. The development of high quality articles directly from latex.
8. Important economies in plant and equipment, resulting from shorter cures.

Mr. Oenslager traced the course of his study leading to the introduction of accelerators and indicated its far-reaching significance in the following quotation:

"One important outcome of the introduction of organic accelerators has been the realization that technically trained men are necessary in the rubber industry. Owing to the hazards of using highly reactive chemicals in the control of vulcanization without adequate knowledge as to their effects, it became necessary to take the compounding of rubber out of the control of production superintendents and place it in the hands of chemists. That step marked the passing of empirical methods. With the advent of the chemist into the industry came the examination and control of raw materials and the scientific study of the various stages of manufacture.

"Technically trained men, therefore, are now regarded as essential to the industry and will, let us hope, become a still more important factor in its growth and development."

Rubber Bibliography

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STUFFING-BOX PACKING. H. Diegman, *Rev. gén. caoutchouc*, Nov., 1932, pp. 33-35.

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ELASTICITY OF RUBBER. K. Herrmann and O. Gerngross, *Kautschuk*, Dec., 1932, pp. 181-85.

HIGH-PRESSURE HOT-WATER HEATING IN RUBBER FACTORIES. H. Brandt, *Kautschuk*, Dec., 1932, pp. 188-89.

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New Machines and Appliances

Waldron Silent Gears

THE introduction of all-steel silent gears represents an important development in silent power transmission. The gears feature a patented method of construction that combines the strength and long life of steel with the added advantages of silent service and self-lubrication.

Silent steel gears are built up of many thin pieces of sheet metal, coated with graphite and subjected to tremendous pressure. They have the appearance of a ground steel gear of ordinary construction, and are specially designed for heavy strain and wear in service. The teeth take on a smooth glass-like polish, providing a rolling surface that greatly diminishes friction. One of the chief claims made for them is the noticeable decrease in number of shutdowns due to broken teeth.

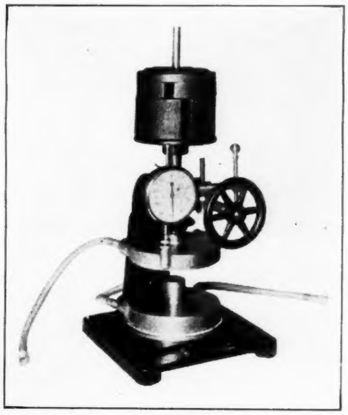
These gears may be run in mesh with each other or in mesh with any gear commonly used as a mating gear for silent pinions. They can be furnished cut to nearly all specifications, or gear blanks can be supplied which cut and machine easily and accurately. Smith & Serrell, 20 Washington Pl., Newark, N. J.

A New Plastometer

A NEW plastometer press has been developed for mill room and laboratory control of rubber plasticity. The design of the apparatus is thoroughly mechanical and combines several new features. No temperature controlled oven or other accessories are needed, and no definite size of specimen is required for the test. The illustration represents the low load type of the plastometer. The structural features of the machine consist of upper and lower hollow platens which may be heated or cooled by steam or water circulation. The upper platen is movable and the lower one is fixed. The lower one is arranged with a central hollow plug, 1 inch high and of 1-inch area. All the circulation that passes through the plate passes also through the plug. The upper platen has a flat surface and is attached to a spindle slidably mounted in a heavy cast-iron frame. It may be raised or lowered by means of a sector gear attached to a handwheel shaft.

The spindle is surmounted by a weight holder on which loose weights of the conventional scale type are placed to vary the pressure on the test specimen according to its condition. One stop holds the platens at the maximum point of separation, and another holds them separated at any predetermined distance. A dial indicating gage is provided and gives micrometer measurements of the spindle's entire movement.

Plasticity determinations are made with the instrument as follows: A sample taken at random from the mix, if not in sheet form, is flattened until it is less than 1 inch thick and more than 2 inches in diameter. It is placed on the plug of the lower platen,

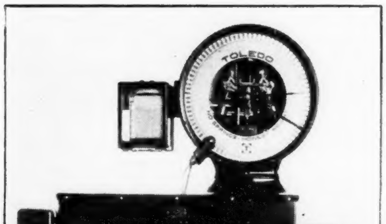


Scott Plastometer—Low Load Type

and the spindle released, allowing the upper platen to press upon the specimen until the lower stop, previously set at some definite distance, has been reached. Thus a definite thickness of stock is located between the plug and upper platen. The second stop is then released and the compression of the specimen as indicated by the gage is taken for some definite period of time.

The test is made at a constant temperature maintained by the circulation through the platens, and the plastic flow of the specimen is effected under a constant weight pressure.

The low load type of plastometer here pictured exerts a minimum pressure of 5 pounds. Machines of lower minimum pressure are made special. When loads heavier than 20 pounds are desired, as in testing vulcanized rubber, a weight beam is furnished so that loads to larger amounts can be applied; while special forms of the machine are built to take loads up to 1,000 pounds or more. Henry L. Scott Co., 101 Blackstone St., Providence, R. I.



Toledo Compounding Scale

Automatic Batching Scale

ATTENTION is called to the automatic batching scale, here pictured, because of the possibility of its utility in batching compounding ingredients for rubber mixing where many batches of the same composition are necessitated in routine production. This equipment reduces the batching of materials to a simple cycle of lever and button operations that can be performed by unskilled labor. This new assembly consisting of a Toledo scale equipped with a photoelectric tube, a lever system, and a set of beams makes the batching operations practically automatic and at the same time achieves greater accuracy and reduces the time required.

The tank or hopper where the batching takes places is mounted on a special assembly on the scale platform. There is a set of beams, one for each ingredient which enters the mix. These beams are regulated by a system of hand levers on one side of the scale. Buttons control the starting of the flow of materials. When the desired weight has been placed on the scale, the photoelectric relay stops the flow. Attached to the head of the scale is a graphic recorder, which provides a checking record for every ingredient that enters the tank and, hence, a constant guard against mistakes.

This equipment is simple to operate. Each beam is set for the correct amount of the ingredients to enter the mix. Once the beams are thus set, the following operations are practically automatic. The operative turns down the first handle, which throws the beam for the first ingredient into the lever system. The indicator has sufficient time to come to equilibrium between the intervals of pressing the button for the weighing of each ingredient in turn. The first ingredient starts to flow into the tank, and the indicator starts to return to zero.

While this ingredient is flowing into the tank, a light beside the button burns brightly. When the necessary amount has entered the tank, this light dims. Thus, by glancing at these lights the operator knows immediately how many ingredients have already been put into the mix and whether any ingredient is flowing into the tank at that instant. The same operation is followed for each ingredient until the batching is complete. Afterwards inspectors can check each batch by the graphic record provided. Toledo Precision Devices, Inc., Toledo, O.

Pasting Machine

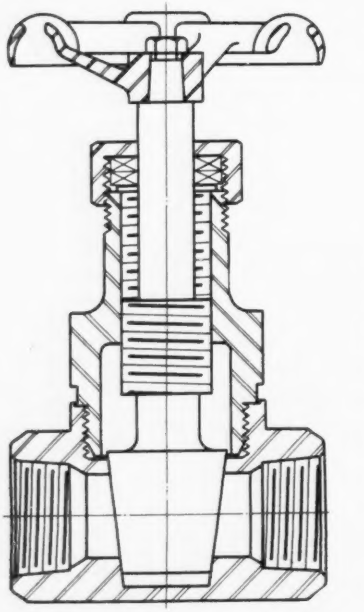
A MACHINE that greatly simplifies the operation of cementing heel pads, overlays, and other small pieces in shoe making is here pictured. It is operated by a foot treadle. Adjustable rods connect from the treadle to each side of the cementing device set upon the bench. The operator places the material on the grid, which has previously been lowered into the pan. The cement is thus applied only where it is actually wanted on the piece and in exactly the correct amount to insure attachment without waste.

This machine method does away with the untidy paste pot and brush and effects a material saving in time and cement. United Shoe Machinery Corp., 140 Federal St., Boston, Mass.

Liquid Latex Valve

CONVENTIONAL types of valves made either of brass or iron prove troublesome in the service of handling latex because they do not have sufficiently full straight ports; furthermore the latex adheres to their inner surfaces and gradually closes the valve openings.

The valve represented in the illustration is of special type developed for use in handling the flow of latex from a small reservoir under gravity flow. It is made of 11 to 13% chromium stainless steel in rod form. It has a full straight opening, and the latex which dries on the inside can readily be cleaned out by running a rod down through the valve. This action is possible because the corrosive agents contained in the latex do not attack the stainless steel as they do brass or iron; therefore there is no roughness of the interior surfaces of the valve to which the deposited latex would adhere tightly. Reading-Pratt & Cady Co., Inc., Bridgeport, Conn.

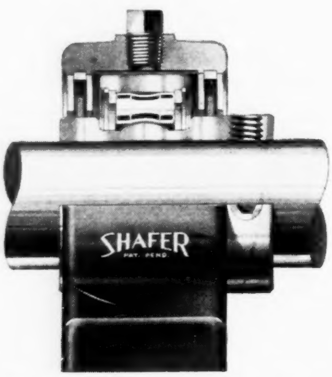


Pratt & Cady Latex Valve

Self-Alining Roller Bearing

A NEW single-row self-alining roller bearing is pictured in the illustration. In this full roller type bearing, concave rollers operate between a straight outer race and a convex inner race. This design assumes liberal radial load capacity with ample provision for the limited thrust capacity needed in applications having moderate loads. Self alinement is obtained in the bearing itself, thus compensating automatically for misalinement due to inaccuracies or shaft deflection under load.

U. S. M. C. Cementer—Model B

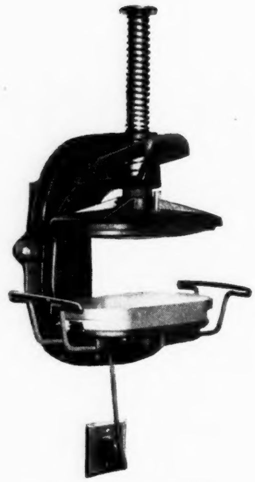


Shafer Light Duty Pillow Block

The bearing is of the full roller type, a retainer being omitted, and it contains fully 50% more rollers. Since these rollers are long, they provide exceptional shock capacity. The thrust is taken by means of hardened and ground thrust plates. In addition to the pillow block illustrated, light duty bearings are available in flange units, hanger boxes, and take-up units for shafts from 9/16-inch to 2 3/16 inches inclusive. Shafer Bearing Corp., 621 S. Kolmar Ave., Chicago, Ill.

Rubber Inlay Welder

THE vulcanizing device here pictured incorporates a new and exclusive patented feature: namely, equalized air pressure of approximately 1,000 pounds applied to the repair area. A metal guard on each



Gabriel Inlay Welder

side of the hot plate supports the tube or other rubber article to be repaired. These guards are located at a slightly higher level than the hot plate, thus keeping the tube from contacting with the edges of the plate and also serving as a convenient support for the tube to enable the operator readily to locate the repaired section at the center of the machine.

This vulcanizer is simple and sturdy in construction, positive in action, and easily operated. The use of air provides a powerful equalized pressure. The heat is supplied electrically to an aluminum plate thermostatically controlled. The vulcanized repair is a bonded rubber inlay and not a patch. The apparatus is adapted for mounting on a pipe floor stand with 2 adjustable shelves to hold cement and tools, or it can be clamped to a work bench by a special bracket. Gabriel Pneumatic Vulcanizer, Inc., 1407 E. 40th St., Cleveland, O.

Latex Dipping Machine

THE possibilities of manufacturing rubber articles direct from latex by the dipping process has stimulated interest in the requisite facilities for lowering and raising the forms in and out of the rubber solution. The dipping process as applied to latex mixtures is free from all fire risk because there is no volatile solvent present as in the case of rubber solutions.

Machines for dipping are simple in construction and operated by hand power. They are especially adapted for making latex dipped finger cots, balloons, nipples, and similar articles. The standard machine is constructed with a rack 27 inches wide by 90 inches long. This size has a capacity of 7 boards 37 by 12 inches, each holding about 100 forms when spaced 2 inches center to center. The machine can be constructed with racks to dip from both sides.

In the machine for dipping glove forms the racks are smaller than the dimensions noted above. Provision is also made for holding the 2-part glove forms in place on the rack by an automatic locking device which locks all the forms in one operation. The Ornamental Iron Works Co., Akron, O.

New Goods and Specialties

Redesigned Bottle

Improved Container

ILLUSTRATED is a good example of redesigning a container to make the product still more useful to the user. The manufacturer's research men worked with mechanics and garage men before undertaking these radical changes. Instead of a round bottle, an "easy to hold" square one is used. Instead of a cork stopper, the swab is welded to a metal screw top cap, eliminating broken corks, loose swabs, messy fingers, and smeary bottles. No more evaporation occurs, as with the old-style cork, for the metal cap fits tightly. The swab used is of the proper size to permit withdrawing from the bottle without squeezing out half its contents and smearing the bottle as a whole. Van Cleef Bros., Woodlawn Ave., 77th to 78th Sts., Chicago, Ill.

A New Fabric

CHERVEL, a new suede-surface fabric for rainwear and sportwear, is said to be soft, pliable, and thoroughly waterproof. It has a deep, durable suede effect of well wearing quality. This fabric, made in 3 styles, according to the backing, comes in a range of rich, fast colors including sand, kasha, chocolate, grey, blue, green, and dark red. Archer Rubber Co., Milford, Mass.

Gro-Cord Mats

FOR safety in the home to prevent accidents in slippery bathtubs and on wet floors The Lima Cord Sole & Heel Co., Lima, O., has perfected a series of mats, the Gro-Cord Non-Slip bath mats, for use in bathtubs, shower stalls, and on bathroom floors. They are made of rubber in which cords are embedded on both sides. Since cords swell when put into water, this feature causes the mat to cling securely to the tub and so prevent accidents.

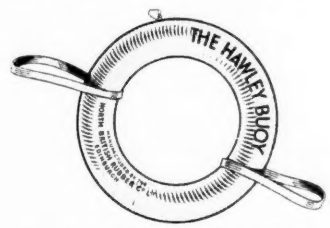
These mats are oval or square in shape, either plain or with a floral design in the center. Available colors are green, blue, cream, and black. Gro-Cord mats are easily cleansed by soaping and rinsing.

The same principle of swelling cords to prevent skidding is used for sink and drain board mats which also eliminate breakage of china and glassware. These mats appear in the same colors and designs as those for the bathroom.

Hawley Buoy

THE Hawley buoy is an ingenious appliance boasting a variety of uses. It is a most efficient device for teaching even the veriest novice how to swim with any desired stroke. It fits snugly and does not hamper action. It is a life-saving buoy for use in case of accident or as a protection for children playing near the water's edge. Then, when placed into its cover, it makes a comfortable air cushion for traveling or for the beach. Moreover it can be used as a pillion seat.

Mouth inflated, it requires no pump. It has a patent valve, which will not leak.



North British Rubber Product

This buoy is of rubber, just like a miniature inner tube. Deflated, it will fold up and go into your pocket.

The buoy comes in 4 sizes: 8, which has a chest measurement of 24 to 26 inches; 9, 27 to 29 inches; 10, 30 to 35 inches; and 12, 36 to 42 inches. If desired, black cloth or velveteen cushion covers are available for each size.

The Hawley buoy cushion, which is made in the same numbers with black cloth or velveteen cover having a lightning fastener, runs in sizes 15 by 14 inches, 16 by 15, 18 by 16, and 20 by 18 inches.

The Hawley buoyant pillion seat in waterproof leather-cloth with lightning fastener includes fittings and the buoy. This seat is produced in the sports model and the carrier type. It can be fitted easily and securely and will not roll. It absorbs all vibration. The base of the seat can be removed in a few seconds to give a comfortable oval air cushion. The North British Rubber Co., Ltd., 200-208 Tottenham Court Rd., London, W. 1, England.

20¢ Water Bottle

A STRIKING example of quality rubber goods being sold at minimum prices in Woolworth's is a line of 2-quart hot water bottles in an excellent quality of red rubber. This article is of conventional size, fully molded. It has top and bottom tabs with rubber grommeted eyelets. The top tab is an extension of one side of the filling funnel. The bottom of the latter is formed by a rubber piece into which is embedded the shell of the screw closure plug, and the assembly vulcanized integral with the bottle. The screw stopper is of molded composition simulating hard rubber, to the bottom of which is attached a soft rubber gasket held in place by being sprung over a rivet head extension of the stopper.

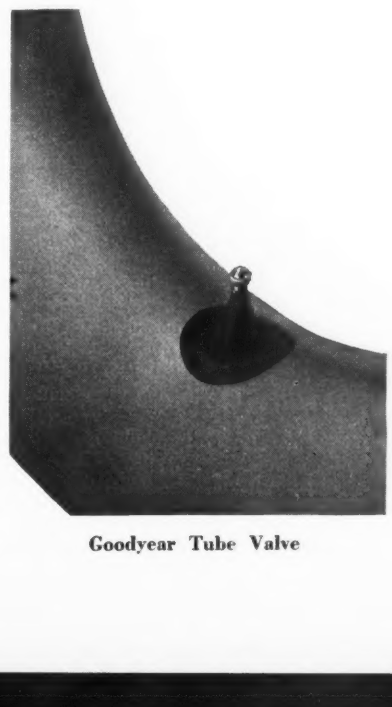
This water bottle compares favorably in construction and finish with those much higher in price and doubtless will prove durable in service.

Rubber Covered Valve

RUBBER covered valves for automobile tire tubes are a recent contribution of The Goodyear Tire & Rubber Co., Akron, O., engineers to the field of tire improvements. These valves are vulcanized to the tube and have no locknut to work loose or start air leakage around the base of the valve as is encountered with the clamped-in metal valve. In case of puncture the rubber valve will slip back into the tire without tearing the tube, which is not the case with metal valves with rim nuts.

Standard metal valve insides are used in making the new rubber covered tube valve. The valve is an integral of the tube. It fits into the rim hole under compression, providing a water-tight seal against entrance of dirt and water to the inside of the tire.

While primarily developed for use on drop center rims on most cars of recent manufacture, the new rubber covered valve tubes can also be employed on many types of flat base rims.


Goodyear Tube Valve

American Rubber Technologists

George K. Hinshaw, chief chem. *b.* Bloomington, Ill., 1891; public schs., Bloomington: B. S., Illinois Wesleyan U., 1913, M. S., 1915; instr. in chem. and physics, Pontiac Township High Sch., Pontiac, Ill., 1914-17; chem. dept., Goodyear T. & R. Co., Akron, O., 1917 to date; chief chem. since Nov., 1932. *Member:* A. C. S., T. K. E. frat., Masons, pres., Goodyear Relief Assn., 1925 to date, chrmn., Akron Rubber Group during 1929. *Address:* 983 Whittier Ave., Akron.

Hugh Clifford Jones, research chem. *b.* Wilkes-Barre, Pa., Oct. 7, 1906; Wilkes-Barre H. S.; Ch. E., Lehigh U., 1927, M. S., 1928; research dept., Atlantic Refining Co., summer, 1927; chem., research div., New Jersey Zinc Co., June, 1928, to date. *Address:* Horsehead Inn, Palmerton, Pa.

George P. Leistensnider, chief chem. *b.* Mansfield, O., Jan. 25, 1904; gram. and high schs., home study courses in chem. and bus. admin.; asst. chem., Mansfield T. & R. Co., Mansfield, 1922-27; technologist, Roessler & Hasslacher Chem. Co., Perth Amboy, N. J., 1927-31; chief chem., Rubber & Asbestos Corp., Jersey City, N. J., 1931 to date. *Member:* Lawrence Lodge No. 62, I.O.O.F., New York Group, Rubber Div., A. C. S. *Address:* 173 Rowland Place, Woodbridge, N. J.

Charles Gardner Lloyd, engr. *b.* Jan. 1, 1893, Ebensburg, Pa.; B. S. in M. E., Pennsylvania State Coll., 1917; summer work, various firms, 1905-16; various positions, Winchester Arms Co., New Haven, Conn., 1917-19; designing and developing, Gardner Calculator Co., Ebensburg, 1919-23; designer, Macbeth-Evans Glass Co., Charleroi, Pa., 1924-26; asst. mech. engr., research bur., Aluminum Co. of Amer., New Kensington, Pa., 1925-29; development engr., rubber and phenol plastic moldings, Western Electric Co., Hawthorne Works, Chicago, Ill., 1929-32. *Member:* A. S. M. E. *Address:* 312 Center St., Ebensburg.

Philip Edmund Rice, supt. *b.* 1897, Matawan, N. J.; Boys H. S., Brooklyn, N. Y.; B. S. in Ch. E., N. Y. U., 1923, Ch. E., 1924; Gen. Labs., U. S. Rubber Co., 1923-24; Naugatuck Chemical Co., Naugatuck, Conn., 1925 to date: research and develop. chem., asst. production mgr. for Lotol and Dispersions, now supt. chem. dept. *Member:* A. C. S. *Address:* 604 N. Church St., Naugatuck.

Charles Herman Robinson, engr. *b.* June 24, 1901, Lima, O.; B. S. in M. E., Ohio State U., June, 1926; junior engr., McIntosh & Seymour Corp., Auburn, N. Y., 1926-27; designer, Cooper-Bessmer Co., Mt. Vernon, O., 1927-29; development engr., Mansfield T. & R. Co., Mansfield, O., 1929 to date. *Member:* A. S. M. E. *Address:* 136 W. First, Mansfield.

Over 400 technical superintendents, chemists, and process development engineers in rubber plants and laboratories have submitted biographical data, to the interest of our readers. Was yours included? If not, we shall be pleased to publish it also.

Frank L. Root, engr. Elec. engrg., Worcester Tech.; maintenance engr., Bosch Magneto Co.; engrg. dept., N. Y. Edison Co.; asst. equipment engr., Remington Arms Co., Eddystone, Pa.; equipment engr. and tool designer, New York Air Brake Co.; consultant on management problems: 5 years with Miller, Franklin, Basset & Co., and later with Stevenson Corp.; chief industrial engr. and budget dir., Mohawk Carpet Mills, Inc., 1929. *Address:* P. O. Box 285, Amsterdam, N. Y.

N. C. Schlegel, engr. Gram. and high schs.; engrg. courses in various schs. and colleges; apprentice, machinist, and draftsman, steam railroad, 1906-13; draftsman, elec. street railway, 1913-14; draftsman, city water supply, 1914-17; asst. engr. to consulting engr., 6 months; asst. engr., gen. contractor, 4 months; plant engr., rubber firm, 1918-19; plant engr., rubber firm, 1929 to date. *Address:* 949 Hillcrest Rd., Ridgewood, N. J.

Morris Goodwin Shepard, development dir. *b.* Lowville, N. Y., Dec. 1, 1887; Cortland State Norm. Sch.; Columbia U., 1913; research chem., J. P. Eustace Mfg. Co., Cambridge, Mass., 1913-14; Gen. Labs., U. S. Rubber Co., New York, N. Y., 1914-17; U. S. Army, 1917-19; research chem., Gen. Labs., U. S. Rubber Co., 1919-25; dir., development and factory control, Naugatuck Chemical Co., Naugatuck, Conn., 1925 to date. *Member:* Amer. Inst. of Chem. Engrs., A. C. S. *Address:* Naugatuck Chemical Co., Naugatuck.

Bruce Robinson Silver, mgr. *b.* Roxbury, N. Y., 1891; Roxbury H. S., Mount Hermon Sch.; N. Y. U., Harvard U., B. S., 1914, M. S., 1915; chem. asst. to Thos. A. Edison, 1917-19; Richmond Levering & Co., 1919-20; chief chem., Dunlop T. & R. Co., 1920-22; mgr., tech. service, New Jersey Zinc Co., 1922 to date. *Member:* A. C. S., Soc. of Chem. Ind., Assn. of Harvard Chemists, Delta Upsilon, Alpha Chi Sigma, Chemists, (Cleveland) University, and Akron City clubs. *Address:* 160 Front St., New York, N. Y.

J. C. Sproull, engr. B. S., 1905, M. E., 1912, Rose Poly. Inst., Terre Haute, Ind.; asst. cashier, Ohio bank, 1899-1901; experimental engr., J. I. Case T. M. Co., Racine, Wis., 1905-06; assoc. prof., mech. engrg., Carnegie Inst. of Tech., Pittsburgh, Pa., 1906-18; gen. mgr., Emerson Lumber Co., summer, 1907; member, Federal Fuel Admin., Pa., during World War; mgr., production labs., B. F. Goodrich Co., Akron, O., 1918-30. *Member:* A. S. M. E., Soc. of Automotive Engr. *Address:* Ansonia, O.

George Frederick Adelbert Stutz, research chem. *b.* Washington, D. C., June 3, 1900; Lehigh U., Johns Hopkins U.: Ch. E., 1922; M. A., Physics, 1924; Ph. D., Physics, 1929; New Jersey Zinc Co.: investigator, research div., 1922-28, chief, fundamental research div., 1928-31, chief, pigment research div., 1931 to date. *Member:* A. C. S., Amer. Physical Soc., Illuminating Engrg. Soc., A. S. T. M., Sigma Psi, Tau Beta Pi. *Address:* Palmerton, Pa.

Samuel H. Webb, engr. *b.* 1897; M. E., Lehigh U., 1919; sales engr. in mech. goods dept., Goodyear T. & R. Co., 1919-21; salesman and member of firm, Hudson Gypsum Co., 1925-26; member of firm in charge of sales, W. S. Webb & Son, Inc., 1926-28; mgr., Los Angeles office of S. H. Lanyon, San Francisco; Lapp Insulator Co., Chicago Fire Brick Co., 1929-30; sales agent, Metal Forms Corp., 1930. *Address:* 59 Durlard Rd., Lynbrook, N. Y.

Morris L. Weiss, chem. *b.* 1891; B. S., Polytechnic Inst., 1916; analytical lab. and research chem., Republic Rubber Co., Youngstown, O., 1917-20; chief chem. and research dir., Dovan Chem. Corp., New York, N. Y., 1920-29; research and plant chem., Foster-Heaton Co., Elizabeth, N. J., 1930-31. *Address:* 85 Johnson Ave., Newark, N. J.

Carl James Wright, v. pres. and gen. mgr. *b.* Hayfield, Minn., April 28, 1889; Ft. Collins, Colo., H. S., 1909; E. E., Rensselaer Poly. Inst., Troy, N. Y., 1913; H. L. Doherty & Co.: junior engr., 1913-14, personal engrg. staff, 1914-15; various natural gas properties, Cities Service Co., 1915-17; industrial heating dept., Toledo Edison Co., 1917-22; technologist, Combustion Utilities Corp., New York, N. Y., 1922-30; v. pres. and gen. mgr., General Atlas Carbon Co., New York, 1930 to date. *Member:* A. S. M. E., Amer. Gas Assn., Downtown Athletic Club, Tau Beta Pi, Doherty Men's Frat., Masons, served on various tech. comm. of A. G. A., A. S. M. E., A. S. T. M., secy., New York Chapter, Rensselaer Alumni Assn. *Address:* 60 Wall St., New York.

Rubber Industry in America

OHIO

Goodrich Notes

"Summing up all present facts, as with all development work, the buying public will be final judge, and there will be many arguments for and against lower pressures, but after carefully weighing all evidence for and against, I believe lower pressures are inevitable for use on passenger cars, trucks, and busses."

So declared K. D. Smith, technical superintendent of The B. F. Goodrich Co. tire division, Akron, in a paper on "Trends in Pneumatic Tires," read before 2 conferences of the supervisory personnel of the tire division January 16. Mr. Smith also read the paper before the Pittsburgh section, Society of Automotive Engineers, Pittsburgh, Pa., January 12.

A. A. Robb, sales engineer in the manufacturers sales department, and O. J. Sullivan, manager of state, county, and municipal truck and bus sales of the Goodrich company, on January 16 attended the annual national Road Show, Highway, and Road Building Congress, Detroit, Mich.

J. H. Connors, Goodrich vice president and general manager of the mechanical goods division, was reelected by acclamation to serve a second term as Chairman of the Mechanical Goods Division of The Rubber Manufacturers Association, Inc. He has been identified with Goodrich mechanical goods activities for over 20 years.

Twenty-nine members of the Goodrich mechanical goods division on January 13 gathered at Young's Hotel to honor 7 fellow workers who just completed 20 years' service with the company: Robert Coleman, James Moore, Alex Shoemaker, Clarence Weckman, Daniel Dunsmoor, Clarence Johnson, and S. S. Surgeon, who were presented their 20-year pins by G. L. Matthias, general superintendent of the mechanical goods division. Besides Mr. Matthias, B. F. Stauffer, assistant general superintendent of the mechanical goods division, and A. E. Moon were in charge of the affair.

Joseph S. Smith, 76, oldest employe in point of years on the active rolls of the Goodrich company, and 6 other workers were awarded 20-year service pins last month. They are William B. Burns, Alfred Hawkins, L. Modroo, George Schanz, Basil Fitzpatrick, and Paul Moyer.

The Akron Equipment Co., Akron, manufactures Tyrwelder tire repair equipment, tire molds, tear test equipment, and rubber machinery made to order. Executives include C. R. Quine, president; M. M. Kindig, vice president; C. F. Schnee, secretary; W. A. Byrider, treasurer; and R. J. Schmidt, purchasing agent.

The Faultless Rubber Co., manufacturer of rubber sundries and specialties, Ashland, recently reorganized its executive personnel as follows: T. W. Miller, formerly chairman of the board, now president, a position he held in the past for many years; W. H. Balch, who returns to the firm as vice president; M. Kaufmann, second vice president; G. A. Meiler, secretary-treasurer; and V. L. Miller, factory manager.

The Ohio Rubber Co., with factory at Willoughby and branch at 725 St. Clair Ave., Cleveland, manufactures molded rubber goods, mats and matting, and rubber covered steel running boards. E. H. Griffith is vice president, and C. Edward Hyke, general manager.

Stanley Harris, president and general manager of The National Rubber Machinery Co., Akron, sailed January 22 aboard the *S. S. Bremen* for England on a business trip. He will travel also in Germany, France, and Italy.

The Barr Rubber Products Co., Sandusky, manufactures advertising specialties and premium goods, balls, balloons, toys, and novelties. Randolph J. Dorn is president and purchasing agent; Henry Graefe, vice president; and H. I. Scott, secretary-treasurer.

The Surety Rubber Co., Carrollton, according to President S. S. Hall, recently bought the former plant of The Tuscon Tire & Rubber Co. In addition to its present products (electricians' rubber gloves, sleeves, and blankets and household and industrial rubber gloves) Surety will manufacture, as soon as necessary equipment is installed, about February 15, latex household, surgeons', and industrial gloves. J. B. Hall is secretary-treasurer of the company.

The Advance Rubber Co., Akron, reports President F. R. Jefferys, moved its factory and general offices from 1796 E. Market St. to 100 Beech St., thus securing more adequate plant manufacturing space to handle the steady increase in sales enjoyed by the company since its inception.

The DeVilbiss Co., 300 Phillips Ave., Toledo, lists as its rubber products bulbs and tubing for atomizers and special types of hose. Branches are maintained at 25 W. 45th St., New York, N. Y.; 2865 E. Grand Blvd., Detroit, Mich.; 410 N. Broad St., Philadelphia, Pa.; 1166 W. 22nd St., Chicago, Ill.; 831 Howard St., San Francisco, Calif.; and 8825 Carnegie Ave., Cleveland, O. Executives include A. D. Gutchess, president; F. A. Bailey, vice president; W. W. Conklin, secretary-treasurer; and R. W. Witchner, purchasing agent.

MIDWEST

U. S. Rubber Co.

The United States Rubber Co.'s tire plant at Detroit, Mich., increased work hours 20% during January, according to J. F. O'Shaughnessy, vice president in charge of sales, who said, "Resumption of comparatively large production schedules by the automobile industry, in connection with the introduction of new lines of passenger cars for 1933, has had a favorable effect on the number of work hours at our disposal. . . . A normal payroll will benefit from the hour increase, because for several months it has been possible, through a controlled distribution of work hours, for the tire plant to maintain practically a constant number of workers. This system of operation has been followed because of a desire to give as much work as is available to the largest possible number of men."

On the road today are 29,000,000 passenger car tires that should be replaced at once declared L. S. Simpson, general sales manager, U. S. Rubber tire department, who based this estimate on a recent survey by the company to determine the number of unsafe tires in operation. This survey showed that one of every 3 tires checked had been worn smooth and was a real danger to motoring.

"Multiplying the number of passenger cars registered in the United States, approximately 22,000,000, by 4, the number of tires in use on each car, and dividing by 3, we get a total of 29,000,000," explained Mr. Simpson. "In view of this situation, characterized by a real menace to motoring, it would seem that a good replacement market definitely awaits the tire industry in 1933."

James B. Day & Co., 1872 Clybourne Ave., Chicago, Ill., of which A. T. Day is purchasing agent, manufactures millinery cement.

The Twenty-second Annual Safety Congress will be held October 2 to 6, 1933, in the Stevens Hotel, Chicago, Ill. Many new ideas are going to be worked into this meeting, and visitors will have opportunity to see The Century of Progress Exposition, commonly called the 1933 World's Fair.

Wilson Western Sporting Goods Co., 2037 Powell Ave., Chicago, Ill., manufactures golf balls. Company executives are L. B. Icely, president; Dave Levinson, vice president; Wm. C. Buethe, secretary; J. D. Hopkins, treasurer; and E. O. Goll, purchasing agent.

Belden Mfg. Co., 4647 W. Van Buren St., Chicago, Ill., manufactures insulated wires, cables, and cords. J. C. Belden is president and treasurer; N. B. Parsons and W. Jacobs are vice presidents.

EASTERN AND SOUTHERN

Pusinelli & Poel, Inc., announced its liquidation, effective December 31, 1932. This move marks the end of an old firm begun in 1918 as Poel & Kelly, which in itself was a continuation with many changes in name and personnel of Heilburt & Ruben, organized in London, England, in 1838.

Thomas, Douglass & Co., 347 Madison Ave., New York, N. Y., recently was organized to conduct a rubber brokerage business. Telephone: VAnderbilt 3-4360. Principal members of the firm are C. H. Thomas, W. R. Douglass, and N. W. Diamond.

Walter F. Platt, Jr., formerly assistant manager of the Eastern Sales Division, Archer-Daniels-Midland Co., New York, N. Y., office, opened an office for the company in the Philadelphia Saving Fund Bldg., Philadelphia, Pa. In addition to this company's linseed oils Mr. Platt will have charge of sales in Philadelphia and vicinity for The Werner G. Smith Co., china wood oil and fish oils; Cook Swan Co., Inc., whale, sperm, and fish oils and kindred products including spermacetti and hydrogenated (hardened) oils; William O. Goodrich Co., soya bean oil; The Wyandotte Oil & Fat Co., hydrogenated oils and synthetic stearic acid (double-pressed).

Ernest Wiener, exporter, importer, and selling agent for Atlantic Rubber Works, M. Steinberg, and Phoenix Rubber Works, all in Germany, has moved his offices and showrooms to larger quarters at Suite 1411, 220 Fifth Ave., New York, N. Y. Telephone: CAledonia 5-0997.

The Roessler & Hasslacher Chemical Co., Inc., advertising section, formerly at Niagara Falls, N. Y., has been transferred to Wilmington, Del. All correspondence regarding advertising should be addressed to John J. Landy, Advertising Manager, The R. & H. Chemicals Dept., E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.

Lee Tire & Rubber Co., Conshohocken, Pa., according to Advertising Manager Geo. H. Duck, is operating full force 3 days a week. The company was building up inventory preparatory to installing a new mill line, and this work is progressing satisfactorily. During the past 6 months Lee moved its tube making operations from Youngstown, O., to Conshohocken.

The Poole Foundry & Machine Co., Woodberry, Baltimore, Md., according to Secretary-Treasurer L. M. Ricketts, has appointed Frank M. Esch, P. O. Box 742, Houston, Tex., as direct representative for Poole flexible couplings and reduction gears in Texas, and the Rockfield-Davis Equipment Co., 1500-17th St., Denver, Colo., as representative in Colorado, Wyoming, and New Mexico to carry a complete line of Poole flexible couplings in stock for distribution in this territory.

Kelly-Springfield Plan

New securities provided for in the capital readjustment plan of Kelly-Springfield Tire Co. were apportioned and ready for delivery to certificate holders on and after January 3.

"The capital readjustment has been completed," W. H. Lalley, president of the tire company, states, "without any new financing, and has given the company an outstanding balance sheet. The following results have been obtained by the readjustment: elimination of approximately a $10,000,000 deficit; elimination of about $7,250,000 of patent rights and good will items; creation of a surplus in excess of $2,600,000; elimination of all accrued obligations for dividends and sinking funds on preferred shares; reduction of over $181,000 per year in carrying charges after including fixed obligation of $177,000 per year, interest on 10-Year 6% Notes.

"The company has been free of all bank loans since September 1, 1931, and current ratio as of October 31, 1932, was 15 to 1. Statement of operations for the first 6 months of the current year showed a profit of $57,101 after all charges including interest requirements for the new 10-Year 6% Notes.

"Definite economies in operation, begun in May, 1931, have been continued during 1932 so that the cost of operations in manufacturing, sales, distribution and administration, and in all other departments have been brought to the lowest level in the company's history."

Mr. Lalley also reports that the company has completed plans for 1933 for the most comprehensive sales campaign ever undertaken by the company. The main feature of the campaign will be an aggressive newspaper advertising program to be launched early this year.

Preparatory to this activity, company sales executives have held a nation-wide series of meetings with the sales force and with distributers in all key markets.

"We have something new to advertise," adds Mr. Lalley. "Kelly-Springfield has made a real advance in tire design and construction, as has been demonstrated by our new registered tire, 'The Fatigue-Proof,' which we are now manufacturing and which we regard as revolutionary. The development of this new tire has required more than one year and is backed by 39 years of manufacturing experience."

The National Association of Waste Material Dealers, Inc., Times Bldg., New York, N. Y., will hold its twentieth annual convention at the Sherman Hotel, Chicago, Ill., from March 13 to 15 inclusive. Besides the annual meeting of the association and the twentieth annual banquet, there will be important meetings of all the divisions and subsidiary associations connected with the parent organization.

St. Joseph Lead Co., 250 Park Ave., New York, N. Y., announces that its leaded zinc oxide has been adopted by some of the leading rubber goods manufacturers for use in rubber mixings where zinc oxide is indicated because of the satisfactory results obtained. Stocks of leaded zinc oxide are being maintained at the more important consuming centers in the United States.

The Brown Instrument Co., Philadelphia, Pa., announced the appointment of O. B. Wilson, formerly manager of its Cleveland, O., office, as district manager of the territory comprising Texas, Louisiana, and southern Arkansas, with headquarters at Houston, Tex.

The Fourth Annual Greater New York Safety Conference will be held March 1 and 2 at the Pennsylvania Hotel, New York, N. Y., under the auspices of the Metropolitan Chapter of the American Society of Safety Engineers, Engineering Division of the National Safety Council. Fifty-four speakers will appear before 16 sessions held during the 2 days, and over 50 organizations are cooperating in sponsoring the affair. The 1932 conference attracted a registration of over 2,500, and the General Committee, of which George M. McAinsh is chairman, is working diligently to increase the attendance at the coming conferences.

Ulmer & Co., 257 N. Third St., Philadelphia, Pa., lists as its products waterproof rubber tile cements and linoleum paste cements and shellac varnishes. The firm consists of a partnership of George B., Jr., and John R. Ulmer.

Rubber Products Corp., Doylestown, Pa., manufacturer of rubber specialties, operates its plant under normal conditions.

Vulcanized Rubber Co., Morrisville, Pa., reports that hard rubber business has shown little improvement.

The Triplex Products Corp., Chanin Bldg., New York, N. Y., having taken over the sale and exclusive rights to manufacture and distribute the Pneumatic "Walk-on-Air" Rubber Heel, from the Pneumatic Rubber Heel Co., under its patents, proposes actively to push this new heel. It has many qualities of merit: it is the only really corrective balancing heel on the market and as such is strongly endorsed: it is resilient, non-skidding, practicable, and dependable.

Givaudan-Delawanna, Inc., with factory at Delawanna, N. J., branches at 605 W. Washington Blvd., Chicago, Ill., and 1402 Walnut St., Cincinnati, O., and principal office at 80 Fifth Ave., New York, N. Y., manufactures compounding ingredients and chemicals including aromatics and rubber deodorants. Dr. Eric C. Kunz is vice president of the company, and W. H. Adkins, purchasing agent.

NEW ENGLAND

Boston Shoe Show

The Eleventh Annual National Boston Shoe Show, Hotel Statler, Boston, Mass., January 16, 17, and 18, proved a real attraction for buyers according to the exhibiting rubber manufacturers. The show this year covered 5 floors of the Statler and overflowed into 2 nearby hotels.

Of particular interest there was the drive to "Buy American." Many manufacturers are stamping their shoes "Made in America."

The Plymouth Rubber Co., Inc., Canton, Mass., reported that over 160 buyers, all new prospects, visited its very large display. The number of orders that resulted made it one of the best shows Plymouth had ever attended. Its main exhibit centered around "Ply Glaze," a new material making the inside of a shoe look and wear like the fine leathers used in costly footwear. Another interesting Plymouth feature was the numerous rubber articles for use in the shoe trade for premium purposes. A large selection of bathing caps, capes, aprons, balls, and beach sandals were featured. The demand for such articles has grown rapidly within the past few years, Plymouth officials state, so much so that it has been well worth their while to feature these items along with their other materials more specifically a part of the shoe business. Among these were rubber heels, crepe soles, gem duck, sock lining, molded sport soles, and regular slabs. Representing the company were: Walter Bieringer, vice president; Philip Berstein, sales manager, heel department; and I. Brockman, sales manager of the quarter lining and sock lining department.

Another company with a most attractive exhibit was the Stedfast Rubber Co., Mattapan and North Eastern, both in Mass. Its outstanding product was the new Veil and Dot Hitex sock linings in a wide variety of color combinations that are gaining wide popularity in the open shank sandal. Its particular improvement feature is the dressing up of all shoes, pepping up appearance, and contrasting strikingly with the quarter linings.

Also shown were a line of reenforcements and full lines of "Kafsted." In charge of the booth were E. N. Peterson and H. N. Cohn. Company officials present included A. Sydeman, president and treasurer; Al Grossman, superintendent of the North Eastern plant; and J. L. Clifford, factory manager and technical director.

The Panther-Panco Co., Chelsea, Mass., had a large room exhibit of its composition and fiber soles and heels, with N. J. Berein, Mike Kellagher, Harry Crossman, and Frank Black in charge.

The Essex Rubber Co., Trenton, N. J., had a display attended by company officials.

The Stedfast Rubber Co., Inc., Mattapan and North Eastern, both in Mass., and Granby, P. Q., Canada, have been granted patents for "Kafsted" in both United States and the Dominion.

Surgical Dressings, Inc., 65 Brookside Ave., Boston, Mass., sole manufacturer of Sterilastic surgical dressing, is protected by recently issued United States patents covering the manufacture, sale, and use of Sterilastic dressings. The company has taken part of the factory occupied by the Clifton Mfg. Co., Jamaica Plains, Mass., and will make a complete line of surgical tapes, etc.

The Norwalk Tire & Rubber Co., Norwalk, Conn., manufactures auto casings and tubes, rubber accessories, and storage batteries. Executives include J. W. Whitehead, president; L. P. Arnold, vice president; H. C. Miller, secretary; and Wm. K. Valentine, treasurer and purchasing agent.

United Elastic Corp., with principal office at Easthampton and factories at Easthampton, Littleton, and Lowell, all in Mass., makes elastic webs, webbings, braids, and cords, and self-folding heater, vacuum, and lamp cords. Officers are E. L. Shaw, president; W. L. Pitcher, treasurer; and H. W. Conant, secretary and assistant treasurer. Companies controlled by the United Elastic Corp. are Glendale Elastic Fabric Co. and George S. Colton Elastic Web Co., both of Easthampton, and Conant Houghton & Co., Littleton. The company trade name is Elastex.

Clifton Mfg. Co., Jamaica Plains, Mass., is turning out a new full line of baby pants.

Converse Rubber Co., Malden, Mass., for 6 months in the hands of receivers, Thomas H. Mahoney, Samuel Haines, and Albert Wecgsler, by March 1 will have turned back to it its remaining assets under a decree of Judge Wilford D. Gray, of the Middlesex Superior Court, and will again operate without receivers. Since the latter took over the company last June, Converse made a profit of $73,000 and is expected to be liquidated by February 1.

George Heathcote, of the Hood Rubber Co., Inc., Watertown, Mass., last month, was elected to the Employe Advisory Committee of the Boston Better Business Bureau.

New York Insulated Wire Co., Division of Essex Wire Corp., Wallingford, Conn., manufactures rubber insulated wires, cables, flexible cords, friction tape, splicing compounds, etc. Trade names include Raven Core, Grimshaw, and Scotch Boy. Sales offices are at 420 Lexington Ave., New York, N. Y.; 1 Federal St., Boston, Mass.; 1315 H St., N.W., Washington, D. C. Company officers include Addison E. Holton, president: David S. Davis, vice president; T. Ferdinand Wilcox, secretary; Robert F. Herrick, Jr., vice president and treasurer; and Ralph H. Mount, purchasing agent.

Rhode Island

The rubber industry here looks forward with increasing confidence. As with many other basic industries, conditions in rubber manufacturing tended toward stabilization in 1932. The Rhode Island rubber industry manufactures a specialized product and has not, therefore, come under the influence of adversities which have beset manufacturers of heavier types of rubber goods. Local plants have been reasonably busy turning out goods which, because they enjoy a more flexible market, righted themselves quicker and threw off depressing influences faster than other divisions of the trade.

Footwear, hospital and surgical sundries, sports goods, and novelties form Rhode Island's rubber manufactures. Each of these articles is a relatively fast moving, low priced product. There was ready liquidation of these articles when the depression first began. The process of eliminating stocks, reducing manufacturing capacity, and correcting trade weaknesses was virtually completed while the rest of the industry was still struggling with the same problems. Fundamentally the situation appears bright as far as the outlook for 1933 is concerned, according to local officials. Stocks continue low; demand shows every indication of increasing as spring approaches. Heads of local plants anticipate continued but slow recovery in their particular lines during 1933.

While figures are not yet available upon which to base a comprehensive review of the rubber industry in Rhode Island during 1932, some idea may be gained from a study of conditions by the Brown University Business Service for October, issued last month. Six Rhode Island rubber manufacturers employed 4,032 persons in October, with a total monthly payroll of $227,000 as compared with 3,810 employes and payroll of $179,000 in September, 1932, and 3,655 employes in October, 1931, and payroll of $288,000.

The Hope Rubber Co. closed its retail department at 136 Westminster St. and consolidated its business at the wholesale plant, 210 W. Exchange St., Providence.

Davol Rubber Co.'s Foremen's Association, Providence, recently held a dinner and entertainment at the Narragansett Hotel, Providence, attended by 70 guests. Professional entertainment and addresses by Ernest Kilcup, acting treasurer of the company, Leon Nodine, assistant manager, and Jesse Little, superintendent, were on the program. Thomas Dyson was installed association president: the other officers includes: Richard Carr, treasurer; James Montague, secretary; and Frank Jackson, vice president. Mr. Kilcup conducted the installation.

The Phillips-Baker Rubber Co., 44 Warren St., Providence, has awarded a contract for reenforcing one of the manufacturing buildings in the company's plant with steel girders at a cost of $7,000.

Columbia Narrow Fabric Co., Shannock. New equipment has been completed

and is now generating electricity for the plant. The new 125 h.p. generator, will supply current enough to run much of the machinery, but direct current will also be necessary from the local public service company. The improvements consist of a new vertical turbine water wheel, a direct mounting generator, a new switchboard, a new fire pump, and a Lombard governor encased in a steel and concrete flume. The broad silk mill of the company is running 3 shifts 24 hours daily, with 60 employes. This mill is in charge of Superintendent Alfred A. Gobeille, who recently patented a new fabric, a combination of rubber and silk, now being manufactured, which is known as bagatelle crepe or waffle crepe. It is made in all colors, is washable, and is claimed not to shrink. The cloth is suitable for dresses, hats, and handbags. The company operates 3 mills, 2 at Shannock and one at Peace Dale. The company has been in business through 5 generations of Clarks, starting in 1756.

The American Webbing Co., Pawtucket, notified the Secretary of State that it has reduced its capital from 5,000 shares of common no par value to 200 shares of common no par value.

Collyer Insulated Wire Co., Pawtucket, reported a decided increase in business and is operating 5½ days a week, with a night shift for the braiders. Orders are especially heavy for appliance and lamp cords. W. A. Boyd, master mechanic, 74, recently completed 50 years with the company.

Canadian Raybestos Co., Ltd., Peterborough, Ont., Canada, manufacturer of linings in Canada since 1920, recently added 2 structures to its plant. About 90% of Raybestos products are now being made in the Dominion.

NEW JERSEY

Most New Jersey rubber manufacturing, including hard rubber, raincoat and automobile materials, and tires, declined during the mid-Winter. Molded press goods, however, are holding their own.

Whitehead Bros. Rubber Co., Trenton, operates 5 days a week. The rubber shoe production also continues good.

Murray Rubber Co., Trenton, of which Alfred H. Branham is receiver, and Charles Hellyer, purchasing agent, manufactures Murray, Mason, Regal, Luckstone, and Hyway King tires and tubes, and special brand tubes. The company reports business has dropped off a little but is expected to improve in the spring.

The Thermoid Company, Trenton, had a large display at the exhibition of the National Standard Parts Association held at Detroit. James A. Wheatley, Thermoid sales manager of automotive parts, was elected a director of the association. F. Robert Lee, Thermoid vice president and general sales manager, was elected president of the National Brake Lining Association at its annual convention in Detroit. Thermoid has been busy taking an inventory of the factory, resulting in curtailed production.

L. Albert & Son, with principal office at 680 N. Olden Ave., Trenton, and branches in Akron, O., and Compton, Calif., handles rebuilt and new rubber mill machinery of every type, with engineering and erecting service. Executives include I. H. Albert, president; R. Albert, vice president; S. L. Albert, secretary; and P. E. Albert, treasurer and purchasing agent.

Pierce-Roberts Rubber Co., Trenton, finds business is holding up very well, showing improvement over last year.

Pequanoc Rubber Co., Butler, is one of the largest reclaiming factories in the world. Officers are Jos. F. McLean, president; C. J. Howell, vice president; M. T. Gunter, secretary-treasurer; and J. P. Decker, purchasing agent.

Frank Sayen, president of the Mercer Rubber Co., Hamilton Square, has been on a lengthy business trip through the Far West.

Minor Rubber, Inc., 25 Branford Pl., Newark, acts as manufacturers' agents and jobbers. Some of the rubber goods that the company handles are made under its own brand to its specifications. Executives include Charles W. Humphreys, president, treasurer, and purchasing agent; James Robinson, vice president; and E. D. Humphreys, secretary.

The Neptune Rubber Mfg. Co., Trenton, manufacturer of bathing goods, gloves, matting, etc., closed its plant for the winter and will reopen in the early spring.

Lamborn, Hutchings & Co., 37 Wall St., New York, N. Y., member of all principal exchanges, opened a branch office in the National State Bank Bldg., 810 Broad St., Newark, under the management of Harlow H. Morgan. Telephone MArket 2-5880-1.

Rare Metal Products Co., Belleville, manufactures antimony sulphuret. D. A. Shirk is president; R. E. Myers, vice president and treasurer; and H. L. Williamson, secretary and purchasing agent.

Somerset Rubber Reclaiming Works, with factory at E. Millstone and principal office at New Brunswick, lists as its products reclaimed rubber, hard rubber dust, and rubber batched pigments. Executives include Israel Laurie, president; B. S. Marcus, vice president; and Irving Laurie, secretary-treasurer and purchasing agent.

Joseph Stokes Rubber Co., Trenton, experienced decreased business at both the Trenton and Ontario, Canada, plants.

Walter J. Leatherow, prominent for many years in the toy balloon industry as head of the Howe-Bauman Balloon Co., Newark, is now a member of The Oak Rubber Co., Ravenna, O., organization as eastern representative. The Howe-Bauman brand is merged with and becomes part of the Oak line. Mr. Leatherow entered the balloon business in 1906 when he started the Rubber Balloon Co. of America and produced the first seamless rubber balloons made in this country. In 1911 he organized the Howe-Bauman company.

Hamilton Rubber Mfg. Co., Trenton, having resumed operations after a week's shutdown, states business is picking up again.

James P. Flynn, general manager of the Puritan Rubber Co., Trenton, returned from a trip of several weeks through the Far West and South, where he visited all the Puritan distributers. He brought back a number of good orders and says prospects are encouraging.

LATEX DIPPED FOOTWEAR

AN IMPROVED method has been patented[1] for manufacturing lightweight rubber footwear from latex or aqueous dispersions of rubber or reclaim. This method is unique in that the shoes are formed inside out. The article is produced entirely by a sequence of dipping operations, using a last of smooth and highly polished or of variated surface with grooves, designs, or ornamental patterns raised or sunk in the surface.

The former or last is successively dipped in an aqueous suspension or dispersion of rubber, removed, and dried between coats to the extent necessary until the required thickness of deposited rubber is obtained. After the article is formed by dipping in a vulcanizable latex mix it is vulcanized in dry heat, steam, or hot water, or by the application of sulphur chloride. The cured article is finally stripped from the last and turned inside out.

The dipping operation may be carried out by hand or by mechanical means. The sole is formed first, then the body of the shoe, and lastly, if desired, one or more reenforcing coats which will come on the inside of the shoe when the shoe is turned inside out after vulcanization. Thus the sole and the outside of the shoe will be formed first and next to the mold, and the coating applied last will become the inside.

To form the sole the former is dipped only as far as it is desired the sole shall extend and to a determined height on the side of the former. The operation is repeated until the desired thickness is obtained. After the sole is formed the body is next dipped over the sole coats, and similarly after the body coats the reenforcing coats are applied.

Extraction of the water soluble material in the rubber can be effected with improvement to the rubber quality by immersion of the article in boiling water for 2 to 4 hours. In any case the article may be subsequently varnished or given other surface treatment.

[1] United States Patent No. 1,867,879, July 19, 1932.

Rubber Industry in Europe

GREAT BRITAIN

Company News

Unemployment in the rubber industry in England again declined somewhat in November, 1932, official figures show. On November 21, 1932, the percentage of unemployment was 17.1% against 17.7% the month before and 20.7% on the corresponding date of 1931. Employment in the electric cable, lamp, etc., trade, continues to be among the best in the country despite an increase in unemployment from 10.5% in October, 1932, to 12.5% the following month. In November, 1931, it was 12.9%.

The Rubber Industry Bill, providing for contribution by the rubber manufacturers of Great Britain to the Research Association of British Rubber Manufacturers, was laid before the House of Commons for a first reading on December 21, 1932. It is a redraft of similar bills submitted in 1928 and 1931, which never got beyond a second reading.

During November, 1932, the local industry took up 9,514 tons of crude rubber against 5,910 in November, 1931. Total deliveries for the first 11 months of the year totaled 78,118 tons as compared with 67,986 tons the year before.

Despite considerable economies a substantial reduction in trading results over the year ended September 30, 1932, could not be prevented, reports the India Rubber, Gutta-Percha & Telegraph Works Co., Ltd. The turnover at Silvertown decreased largely because of the almost complete cessation of foreign demand for one particular product. The factory at Persan, France, continued to work at a heavy loss, and at one stage closing this factory was considered, but instead drastic measures were taken to enable it to operate without loss unless conditions become worse.

The parent company's balance at the end of September, 1932, shows a loss of £88,893 against £51,593 for the 13 months ended September, 1931; the debit balance brought forward was £123,755 so that the total debit now stands at £212,648. The Persan works alone were responsible for a loss of £44,780 in 1932.

The directors of the British Goodrich Co., Ltd., propose to acquire control of an already established factory to increase the company's output capacity. To finance this move new capital will be necessary.

Encouraged by the recently increased use of zinc oxide in the United Kingdom, the Sulphide Corp. is erecting a small plant at the Seaton Carew Works to produce the material for local consumption and export.

The Goodyear Tire & Rubber Co. (Great Britain), Ltd., is said to be producing a new noiseless, non-skid tire at the Wolverhampton Works. It seems that the tire is designed with a tread which in most respects resembles the standard All-Weather type as to appearance except that in the new tire the blocks are irregularly placed. This arrangement apparently greatly reduces the noise caused by the drumming of regularly placed blocks on the road and the rush of air through the spaces.

The financial position of R. & J. Dick Ltd., continues satisfactory, the chairman stated at a recent meeting, but the American company has given much anxiety. The sales of the latter fell to a very low level, and a loss of $119,000 was incurred for the year ended December 31, 1932. It was felt that everything possible had been done for the American company and that in the interests of the firm in Great Britain nothing more could be done. It was proposed not to take up the losses of the American company in the profit and loss account, but to write down the value of its shares by the amount of these losses. The R. & J. Dick Co. recently acquired the rights for Great Britain and the greater part of the world for a new process and expects shortly to market belting made according to this process.

New Rubber Applications

Rubber tubes in various dimensions to fit all types of grain drills and rubber prong protectors for potato digging machines to prevent bruising of the tubers during "lifting" are among the novel aids to farmers made by the Northern Rubber Co., Ltd., Retford, Notts.

The bushing of a new type of universal coupling produced by the Laycock Engineering Co., Sheffield, reports the *Commercial Motor*, comprises blocks of resilient non-cold-flow rubber equally placed in relation to a common axis. The housing for the blocks is light but strong, and the coupling runs smoothly without noticeable loss of power even when operating at an angle as high as 16°, it is claimed. As there is no metal contact between the flanges, effective insulation of noise and vibration is obtained. Reversal stresses in transmission are also cushioned.

Ethanite-Oil Resistant

Ethanite, a recently marketed reaction product of ethylene dichloride and calcium polysulphide, is said to resist practically all solvents, oils, fats, greases; can be compounded and vulcanized; is an antioxidant; and will not sun-crack. In general it is handled in the same way as crude rubber.

As a master batch in itself, Ethanite requires no sulphur for curing, but zinc oxide in the proportion of 1% and up to 15 to 20% if necessary. Cure is effected in 1 hour at 40 pounds' pressure and 287° F. The inclusion of a small amount of raw rubber is advised to facilitate milling, and a mix of 20 Ethanite and 1 rubber is said to be as resistant to oils and greases as Ethanite alone. This resistance declines, however, as the proportion of raw rubber is increased. When raw rubber is added, the necessary amount of sulphur to cure it must be added. Up to 20% of rubber on the Ethanite content may be used if more flexible products are desired.

In compounding, the addition of carbon black is recommended to increase tensile strength and decrease porosity, and about ½% of paraffin wax to prevent the mix sticking to the rolls. The most suitable accelerators are zincazol and mercaptobenzothiazol, or a blend of both. A mix said to resist practically all oils and solvents is: Ethanite 20, pale crepe 1, zinc oxide 2, carbon black 5.

France

The doughnut tire is gaining in popularity in France, and the vogue for large section tires has spread to cycle tires too. However, the extreme type of doughnut with very low pressure is still an American curiosity. At the recently held automobile show in Paris, Michelin featured its new "Superconfort" tire, 150 by 40, which, it seems, is making good headway; and most automobile manufacturers here are using it as original equipment on new cars.

Tires for Michelines were also shown at this exhibition. These rail-cars now are in regular service in France. Besides the tests in America and England, successful experiments have also been conducted with Michelines in Belgium, Holland, Italy, Switzerland, Austria, and Czechoslovakia.

Other special tires exhibited included the Goodrich "Ours Blanc" (White Bear) built to run over snow without chains.

Among the solid tires was the "Multiflex" of the Compagnie Francaise du Caoutchouc, an unusual type of cushion tire divided in 2 over its circumference by an air channel. Under load, the flexible cushion tread flattens somewhat, closing the air channel. It is claimed that the design makes for speed without heating.

Finally attention may be called to the Weydert shock absorber for automobiles, consisting of a spiral spring, a wide, thin metal band embedded in rubber.

Etablissements Bergougnan report net profits of 13,100,000 francs for the past business year against 17,413,360 francs and pay a dividend of 45 instead of 55 francs. With the exception of the Belgian auxiliary all the foreign branches of this firm—in Russia, Italy, and America—have been liquidated. The Belgian concern, the Compagnie Bergougnan Belge, is capitalized at 20,000,000 francs; offices are in Brussels, and the factory in Mariakerke-lez-Gand.

GERMANY

Chlorinated Rubber

At the meeting of the Institute for Varnish Research held November 8, 1932, in Berlin, chlorinated rubber was fully discussed. According to an abstract in *Kautschuk*, December, 1932, products are now available with uniform chlorine content and lowest degree of viscosity. Products containing smaller proportions of chlorine, say 40%, are unstable, but those with high chlorine content are much more stable than hitherto reported. To test stability a solution of chlorinated rubber is spread on copper plates; after drying, these are covered halfway with black paper and subjected to ultra-violet light radiation. Unstable material was recognized by the formation of chloride of copper under the film.

After 1½ years of weathering, it was further stated, chlorinated rubber showed a remarkable effect as compared with other paints. For a waterproof finish it cannot be mixed with linseed oil, but satisfactory results are obtained by spreading alternate coats of linseed oil and then chlorinated rubber or the like. Chlorinated rubber was particularly successful on rusty surfaces, still adhering firmly where oil varnishes had long before cracked off.

Further tests showed that chlorinated rubber can be combined with nitrocellulose, natural and artificial resins, etc. Like the vinyl resins, it is markedly lyophile. It is soluble in all esters and hydrocarbons. Increased chlorine renders the films brittle and reduces the adhesive powers. Only thin viscous types can be satisfactorily sprayed.

Krumbhaar pointed out the importance of the pigmenting question. Without pigment, chlorinated rubber is not stable, and water makes it white. Hard pigments, as finely ground silicon carbide, considerably increase the adhesive powers of chlorinated rubber.

Hauser Joins Semperit

Dr. E. A. Hauser, director of the Kolloid-Chemische Laboratorium of the Metallgesellschaft A.G., Frankfurt a. M., since its inception in 1925, has resigned to join the Semperit Oesterreichisch - Amerikanische Gummiwerke A.G., Vienna. His work in latex research and application have for years been linked with the name Metallgesellschaft and has given its colloid chemical laboratory an international reputation. Dr. Hauser will continue to advise both Metallgesellschaft and Revertex, Ltd., London, England.

Company News

Various rubber manufacturers are planning to reduce their capital or have already done so. Schmidts Gummiwarenfabrik, Arthur Schmidt A.G., Stade, has cut its capital from 600,000 marks to 300,000.

Bremer Gummiwerke Roland A.G., Bremen, incurred a loss of 100,114 marks in 1931 on a capital of 500,000 marks; unfavorable developments last year have more than doubled this loss. Reorganization plans are therefore being considered. It is proposed to reduce the capital first to 100,000 marks and then to bring it up to 400,000 marks.

Asbest & Gummiwerke Alfred Calmon A.G., Hamburg, will reduce its capital of 2,325,000 marks in the proportion of 10:3 to 697,500 marks and then increase it to 1,200,000 marks by issuing 502,500 marks of new shares. This new share capital, it is learned, will be taken by the Helsingborgs Gummifabriks A.B., Helsingborg, Sweden, with which an agreement has been made whereby its special experience in footwear manufacture will be made available to Calmon.

Vulkan Gummiwarenfabrik Weiss & Baessler A. G., Leipzig, again declared a 10% dividend as in 1931. It booked net profits of 93,000 marks in 1932 against 97,560 marks in 1931 despite a 15% decline in the value of sales. Vulkan recently designed a new type of all-rubber brush with or without handles or holders to serve a variety of purposes. Instead of bristles, the brushes have strips of reenforced, roughened rubber, which may or may not be porous.

Ground Vulcanized Scrap Molding

A method for the manufacture of cheap lines of molded rubber goods, particularly soles and heels, has been successfully developed in Europe, where equipment is installed for the production of 500,000 pairs of these products daily. The method is found economically practical in countries in which competing goods of new rubber are excluded by abnormally high tariffs, and the demand is not otherwise supplied locally. Spain and Mexico are said to be making liberal use of this method which yields goods of practical utility for shoe repair work. The materials utilized are waste pneumatic tire treads and inner tubes reduced to a suitable degree of fineness by a series of simple and easily installed machines.

In their order of application the machines include a circular knife on one end of a short shaft fitted with a small flywheel at the opposite end and driven by a belt running on a small pulley half way between knife and flywheel. This mechanism is mounted upon a floor pedestal and is surmounted by a small cylindrical can of water with pet cock for dripping water for lubricating the stock being cut. Production of cut stock is about 50 kgs. (110 lbs.) per hour.

The first stage of grinding is effected on a grinder consisting of a power-driven encased cylinder, on the surface of which are set cutting spikes suitably spaced to pass through the notches of a fixed steel blade set in contact with the spiked cylinder. The action results in tearing to bits the pieces of cut stock fed into a hopper. The latter is hinged on the casing of the machine immediately above the notched steel plate. Access to the cutting parts of the machine is thus very convenient.

The second, or fine grinding, stage is effected in a horizontal belt driven mechanism consisting of 2 encased triturating disks, after the general style of a coffee grinder. This is fed by delivery of the stock by graduated feed from a side hopper to the center of the grinding disks. The power necessary is 6 h.p., and the production capacity 30 to 40 kilos (66 to 88 pounds) per hour.

The fine ground scrap is then ready for batching on a mill with a binding agent such as mineral rubber, or according to one patented method[1] latex can be used as a bonding agent. However bonded, the sheeted material with addition of sulphur is vulcanized in an electrically heated hand-power hydraulic press with several openings or mold decks.

[1]British patents Nos. 302,151 and 315,512.

Czechoslovakia

The Gummi & Balatawerke Matador A.G., Pressburg, and Prager Gummifabrik Vysocany have combined to economize and put operations on a more efficient basis. To this end the capital of the former will be raised from 4,000,000 to 10,000,000 crowns; the shareholders of the latter company will obtain Matador stock in exchange for that they now hold. The new concern will be known as the Matador Prager Gummiwerke A.G., with offices in Prague.

Poland

Reports of leading Polish rubber manufacturers are anything but encouraging. The Pepege concern of Graudenz reports a loss of 13,284,946 zloty. (Zloty = $0.111 U. S. equivalent.) The capital has accordingly been reduced from 15,000,000 to 3,000,000 zloty. The factory was closed 3 weeks in December, and reopened with its working staff cut to 600 to 800 against 1,000.

The Rygawar A.G., in Warsaw, booked a loss of 652,443 zloty on a capital of 1,000,000 zloty.

Gentleman Rubber Works, Lodz, has discharged about 2,000 employes.

Russia

According to the 1932 program production of rubber goods should have represented a value of 243,000,000 rubles for the year. However the value of goods actually produced so far falls far short of this mark, and for the first 9 months of 1932 came to only 131,000,000 rubles.

Exports of rubber goods for the first half of 1932 declined in value when compared with those for the preceding year; the comparative figures are 1,100,000 rubles in 1931 and 900,000 in 1932. When rubber goods exports are compared with total exports, the percentage remains unchanged at 0.3. (Ruble = $0.5145 U. S. equivalent.)

Rubber Industry in Far East

MALAYA

Rubber Valorization

The scheme for valorization of rubber by economic means submitted by the Negri Sembilan Estate Owners' Association requires joint action by the governments of Malaya, Netherlands East Indies, and Ceylon, which are to agree to limit rubber exports to 25% of production for 15 months and thereafter to keep supply adjusted to demand. There will be no quotas; simply ¾ of every consignment for export will be retained by the governments as a levy in kind.

Growers will be paid at least 5 cents (S. S. currency) a pound on all rubber produced, but not allowed to be exported during these first 15 months. Factories are to be established to convert the surplus rubber into motor spirit.

To finance this work the governments will impose a tax of 5⅛d. a pound on all rubber exported for 6 years. It is calculated that the tax will yield £20,000,000 in 6 years; while the subsidy to growers in the 15 months will cost £13,612,200, or with interest, £18,000,000, leaving a balance of £2,000,000 to finance the factories. Recognizing the need of initial capital, the scheme proposes that the governments obtain it by granting an international corporation representing all rubber producers the right to collect the tax on condition that the subsidy had been paid to the producers and the surplus rubber converted into motor spirit.

Finally the governments are to rule that after 5 years, exportation of rubber is to be restricted to those holdings already planted at the time of enforcement of export control, so long as their output meets demand. This scheme, it is claimed, "anticipates nearly all possible objections." Judging from the amount of discussion provoked, it is rather less than perfect.

Motor Spirit from Rubber

Regarding the conversion of the surplus rubber into motor fuel, Dr. Braddon, one of the promoters of the scheme, and Mr. Kendall have succeeded in producing a motor spirit from rubber and have run an automobile on it. It is claimed that it is in some respects superior to petrol, and, incidentally, it may be added that the spirit is to be tested officially by the Automobile Association of Malaya and the Estate Owners' Association. Spirit is obtainable from rubber. But comes the question of disposing of it and costs of producing it. Dr. Braddon is quite prepared to give the spirit away if need be. As to costs, why worry when the export tax is there to cover them? Retaliation by existing oil corporations? Never fear.

"The government will not fail to support an industry which will relieve motor users and oust holders of the present monopoly from their domination over the transport of the country."

Rubber Roads

The rubber industry is much more likely to benefit by attempts in applying rubber to new purposes, as for instance the road experiment at present in progress in Singapore, than by schemes like the above.

The concessionaries for Solar Processes, Ltd., Gammon, Ltd., laid the largest area of rubber road ever made in Malaya, in Singapore, where an area 270 by 29 feet on Raffles Place was treated. The top dressing was removed, and the road bed slightly roughened. A special rubber adhesive, Parafix, was then applied and a mixture, consisting of 20% of rubber, finely powdered fillers, accelerators and activators of vulcanization, poured on to form a smooth, solid carpet from ½- to ¾-inch thick according to the roughness of the road bed. The rubber hardens in several days.

About 2 years ago a rubber road experiment was conducted by Solar Processes, Ltd., on Trafalgar Square, and more recently in Penang and at the Seletar Air Base. In all these tests the rubber mix was laid on a smooth surface with only Parafix as adhesive. Since adhesion in these instances has so far proved successful, it is naturally expected that the latest road, which has the advantage of a mechanical bond in the roughened surface in addition to the Parafix, will prove still more successful. The builders of this road claim that they have evolved the perfect road. It is less slippery and less noisy than any other type; it is resilient, absorbs vibration, is non-abrasive, and will wear longer.

Gammon, Ltd., will also lay a rubber road near Kuala Lumpur under test conditions arranged with the Rubber Research Institute. It is stated that 100 tons of rubber will cover 1 mile by 40 feet wide.

The firm further exploits a rubber road paint, Parapaint, which, it seems, is a fine adhesive, provides a surface that is non-slippery, free from dust, and non-abrasive. The firm has already received an order from the Singapore Municipality to treat the whole of Lavemder St., with the paint, an area covering 18,700 square yards.

Small Holdings

Every quarter the Department of Agriculture of the F. M. S. and the S. S. publishes results of its survey on small rubber holdings in Malaya. The *Malayan Agricultural Journal* for November contains such a report over the third quarter of 1932, showing a slight rise in rubber in August immediately led to renewed tapping on previously rested native holdings throughout Malaya. The only exception was the District of Johore Bahru where areas already have been left untapped for a considerable period. In Negri Sembilan the area of Malay owned holdings under 15 acres that was out of tapping at the end of the quarter was 12,500 acres against 20,000 acres in the preceding quarter.

Despite the later set-back in prices, most small owners feel optimistic enough to continue tapping. In most cases, however, young rubber which in more prosperous times would have been considered ready for tapping, was not touched in spite of the improved prices and the need of cash.

A notable development of the latter need is reported from one area in Johore where natives are selling latex at one cent (S. S. currency) per kati (1⅓ pounds) to local Chinese dealers who themselves prepare sheet from it.

The hope that the exigency of the times would lead many small owners to cut down their rubber has hardly been realized. To be sure a few poor trees and others interplanted with coconuts and fruit have been felled here and there to make room for food crops in localities where no other land for the purpose is available to small holders, but this area amounts to so little that it cannot be expected to influence the output of rubber, in the near future at least.

The report shows that on 360 holdings, planting distances range from 8 by 8 feet to 23 by 23 feet. The number of holdings under these extremes are very small. On 3% the stand of trees per acre was 681 to 436 and on 2.4%, 108 to 82. The majority preferred distances between these 2 extremes. On 20% the stand was 436 to 258 trees; on 21.6%, 258 to 194 trees; and on 36%, 194 to 134 trees per acre. Outside of moldy rot, rather prevalent especially as owing to hard times owners cannot be forced to treat diseased trees, not much disease was reported on native holdings.

Ceylon

Investigations by the London staff of the Ceylon Rubber Research Scheme, said Mr. O'Brien at a recent meeting of the Kelani Valley Planters' Association, indicated the possibility of producing a rubber combining strength and elasticity with softness, as does Singapore blanket. If the final experiments in England prove successful, local planters will be advised on how to improve plantation rubber with regard to softness. Mr. O'Brien also showed samples of a new type of rubber similar, he said to "Chrome Rubber," a Dutch invention. The process worked out by the Rubber Research Scheme in Ceylon has been patented, but is at yet entirely experimental.

— NETHERLANDS EAST INDIES —

Optimistic View of Rubber's Future

Mr. Kastelijn, director of rubber, palm oil, and coffee estates, and technical director of the Propaganda Committee of the International Rubber Association for Rubber and Other Crops in the Netherlands Indies, informed a representative of the *Deli Courant* (Sumatra) that he was a confirmed anti-restrictionist. He will have no government intervention and no artificial maintaining of high prices, which policies would only encourage natives to extend their acreages. Improvement can only be expected when demand balances supply. But he favors voluntary restriction, evidenced by the 50% cut in production on his estates.

In general Mr. Kastelijn is inclined to view the future of rubber optimistically. Increased consumption before very long is certain; at present there is no extension of planting so that the much desired equilibrium between consumption and production may not be so very far away. Consumption, however, must be stimulated as far as possible, he declared, and adequate funds provided for research work. The rubber industry should follow the example of the I. G. Farbenindustrie, he said, which reserves 10% of its profits for research work. The English were far ahead of the Dutch in this respect: Malaya for instance annually raises large sums for the purpose. He then revealed that the International Rubber Association favors compulsory contributions from estates to support experiment stations which should also investigate new uses for rubber. Tires should not continue to be the main outlet for rubber; last year the tonnage of rubber used for tires was considerably reduced; whereas the quantity converted into other articles remained practically unchanged in spite of present conditions.

To the above it must be added that the General Agriculture Syndicate of Java and the South Sumatra Syndicate have requested compulsory contributions to the experiment stations, and from latest reports it seems likely that rubber, tea, coffee, and quinine estates before long will have to pay 0.1 to 0.2 cents per pound. (The amount has not yet been agreed upon.) This levy will apply to estates in Java, and South and West Sumatra; East Coast Sumatra is not included since the research organizations there work much cheaper and are otherwise well supported. The search for new markets and new uses for the crops mentioned will occupy a prominent place in future research work if plans go through.

Rubber Roads

As Mr. Kastelijn pointed out, work on the application of rubber has lagged here, and comparatively little has been done in road surfacing for example. However in the few such tests made, an entirely different method has been followed by the Dutch, probably from a conviction that the resilient, noiseless, shock-absorbing surfaces that form the object of British experiments are not only too expensive but too elastic to be adopted except in congested areas in large cities.

In a review of road experiments in Java and Sumatra in the *Bulletin du Syndicat des Planteurs de Caoutchouc de l'Indochine*, J. B. Deuss declares that for general purposes the surfaces of latex mixed with earth as experimented with in Malaya have more chance of success than rubber blocks. He believes, though, that the aim should rather be to improve existing types of asphalt roads by incorporating latex. Besides tests with Colastex, Mr. Deuss mentions a distinctly novel type of road laid in Tandjong Karang, South Sumatra. This is based on the idea that if the lower layer of a road is elastic, acting as a shock absorber, the top layer will suffer much less the traffic. Therefore, first a layer of concrete was put down, over which was poured a thin layer of hot bitumen. Then elastic blocks of unpurified natural bitumen mixed with latex, dried in the air and smoked like sheet, were placed on the bitumen; the whole was finished by a topping of bitumen, giving the appearance of an ordinary asphalt road. So far the road appears to be satisfactory although no definite conclusions can be drawn yet. The process has been patented.

In other tests layers of asphalt and latex have been put down, but these have not proved satisfactory. Mr. Deuss himself is experimenting with a mixture of latex and earth having a certain degree of acidity, the process follows the Macadam system, where diluted latex is used instead of water.

Value of Rubber Oil

Rubber producers, in their hour of need, have often urged that distillation of excess rubber might yield valuable products which, replacing or competing with others already on the market, would help to ease the rubber situation. Some time ago the Rubber Growers' Association published the results of an investigation in this direction, which led to the conclusion that even if rubber were given away, there was at present no hope for successful economic exploitation of rubber distillation.

The *Indische Mercuur* (November 9, 1932) publishes details of a similar investigation by W. Spoon, covering the possibilities of rubber oil as a means of killing larvae (in combating malaria, for instance), as motor fuel, and as a substitute for turpentine. The tough sticky residue left after distillation was also examined.

Mr. Spoon fully confirms the findings in the Rubber Growers' Association Memorandum. Not only are the rubber oils more expensive, either relatively or actually, than the products they are intended to displace, but lack one or more valuable substances.

EDITOR'S BOOK TABLE

Book Reviews

"The Romance and Drama of the Rubber Industry." By Harvey S. Firestone, Jr., vice president of The Firestone Tire & Rubber Co., Akron, O.

This little booklet of 127 pages is dedicated by the author to his father, Harvey S. Firestone, Sr. It comprises the radio talks delivered by Harvey, Jr., in "The Voice of Firestone" programs over the nationwide network of National Broadcasting Co., September, 1931, to September, 1932.

"Proceedings of the Thirty-fifth Annual Meeting." Held at Atlantic City, N. J., June 20-24, 1932. Vol. 32. American Society for Testing Materials, 1315 Spruce St., Philadelphia, Pa. Cloth. Illustrated. Subject and author indices. Part I has 1,071 pages; Part II, 824 pages.

Part I contains the annual reports of the Society Committees and the papers and standards appended. Rubber manufacturers and technologists will be interested in the report of Committee D-11 on Rubber Products, Committee D-13 on Textile Materials, and Committee D-9 on Electrical Insulating Materials. Tentative specifications are given on Insulated Wire and Cable; Performance Rubber Compound; Friction Tape for General Use for Electrical Purposes; and Rubber Insulating Tape.

Part II comprises the technical papers given at the thirty-fifth annual meeting of the society.

British Malaya

An official cable from Singapore to the Malayan Information Agency, Malaya House, 57 Charing Cross, London, S.W.1, England, gives the following figures for December, 1932:

Rubber Exports: Ocean Shipments from Singapore, Penang, Malacca, and Port Swettenham

	December, 1932	
To	Sheet and Crepe Rubber Tons	Latex Concentrated Latex and Revertex Tons
United Kingdom	5,317	117
United States	16,824	222
Continent of Europe	9,890	179
British possessions	1,023	13
Japan	5,537	21
Other countries	975	...
Totals	39,566	552

Rubber Imports: Actual, by Land and Sea

	December, 1932	
From	Dry Rubber Tons	Wet Rubber Tons
Sumatra	480	4,746
Dutch Borneo	303	2,426
Java and other Dutch Islands	177	8
Sarawak	631	13
British Borneo	173	23
Burma	262	12
Siam	169	237
French Indo-China	335	33
Other countries	54	7
Totals	2.584	7.505

Patents and Trade Marks

MACHINERY

United States

1,888,987. **Sole Presser.** R. J. King and R. A. Blake, both of New Haven, assignors to Goodyear's India Rubber Glove Mfg. Co., Naugatuck, Conn.
1,889,102. **Rubber Thread Apparatus.** E. A. Murphy and D. F. Twiss, both of Sutton Coldfield, England, assignors to Dunlop Rubber Co., Ltd., a British company.
1,889,361. **Electrical Measurer.** R. D. Hickok, Cleveland, assignor to Magnetic Gauge Co., Akron, both in O.
1,889,385. **Temperature Indicator.** P. B. Schuster, assignor to Magnetic Gauge Co., both of Akron, O.
1,889,546. **Material Rack.** C. C. Gates, Denver, Colo.
1,889,904. **Inner Tube and Airbag Device.** F. T. Roberts, Malone, N. Y.
1,890,133. **Expanding Core and Tire Mold.** A. H. Shoemaker, Seattle, Wash.
1,890,218. **Tire Scuff Detector.** J. F. Duby, Boston, Mass.
1,890,746. **Hydraulic Tire Press.** C. B. O'Dell, McMinnville, Ore.
1,890,785. **Collapsible Tire Building Form.** F. L. Johnson, Akron, O.
1,890,952. **Bead Gum Strip Applier.** J. A. Shively, assignor to Goodyear Tire & Rubber Co., both of Akron, O.
1,890,968. **Heel Mold.** E. B. Carter, Lexington, Mass.
1,891,088. **Mold Filler.** J. R. Gammeter, Akron, O.
1,891,264. **Rubber Soled Shoe Machine.** F. D. Kinney, Wenham, Mass., assignor to United Shoe Machinery Corp., Paterson, N. J.
1,891,489. **Tire Casing Apparatus.** H. Willshaw, assignor to Dunlop Rubber Co., Ltd., both of Birmingham, Eng.
1,891,789. **Tire Reclaimer.** O. A. Wheeler, Portland, Ore.
1,891,976. **Mold Opener.** G. Goebel, assignor to Canfield Rubber Co., both of Bridgeport, Conn.
1,892,024. **Tire Foundation Apparatus.** H. Willshaw, Wylde Green, and W. A. Cowles and H. Smith, both of Birmingham, assignors, by direct and mesne assignments, of ½ to Dunlop Rubber Co., Ltd., a British corp., and ½ to Francis Shaw & Co., Ltd., Manchester, all in England.
1,892,028. **Mill Roll Cooler.** S. W. Alderfer, Akron, O.
1,892,629. **Tubing Apparatus.** F. B. Pfeiffer, Akron, O., assignor to Seiberling Rubber Co., a corp. of Del.

Dominion of Canada

328,288. **Mat Machine.** Goodyear Tire & Rubber Co., assignee of W. H. Leavenworth, both of Akron, O., U. S. A.
328,470. **Bias Cutter.** Dunlop Tire & Rubber Corp., Buffalo, assignee of C. S. McChesney, Kenmore, and F. G. Reid and N. L. Cornell, both of Buffalo, all in N. Y., U. S. A.
328,471. **Extrusion Apparatus.** Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Ont., assignee of J. Hall and G. F. McCombe, co-inventors, both of Birmingham, England.
328,580. **Valve Stem Locking Device.** W. L. Fairchild, New York, N. Y., U. S. A.

United Kingdom

380,003. **Calender.** Continental Gummi-werke A. G., Hannover, Germany.
380,121. **Road Vulcanizer.** W. T. Siew, Penang, Straits Settlements.
380,131. **Inner Tube Mold.** A. H. Stanley, London. (W. W. Potter, Pawtucket, R. I., U. S. A.)
380,174. **Hollow Article Mold.** Latex Holding Co., assignee of F. L. Killian, both of Akron, O., U. S. A.
380,178. **Tube Extruder.** Dunlop Rubber Co., Ltd., London, and H. Willshaw, Ft. Dunlop.
380,287. **Tire Vulcanizing Press.** Summit Mold & Machine Co., assignee of J. W. Brundage, both of Akron, O., U. S. A.
380,382. **Gas Mask Mold.** Soc. Italiana Pirelli, Milan, Italy.
380,565. **Extrusion Machine.** Goodyear Tire & Rubber Co., Akron, O., U. S. A.
380,671. **Tire Vulcanizing Press.** B. De Mattia, Clifton, N. J., U. S. A.
380,721. **Tire Mold.** Goodyear Tire & Rubber Co., Akron, O., U. S. A.
380,736. **Tire Repair Vulcanizer.** Goodyear Tire & Rubber Co., Akron, O., U. S. A.
381,075. **Thread Vulcanizing Apparatus.** Revere Rubber Co., Providence, R. I., assignee of W. A. Gibbons, Montclair, and E. G. Sturdevant, Passaic, both in N. J., all in the U. S. A.

Germany

565,384. **Tire Tool.** A. Pohl, Berlin-Lichtenrade.
565,398. **Electrically Heated Mold.** M. Szurau, Berlin-Charlottenburg.
565,843. **Dipping Machine.** Maschinen & Apparatebau-Gesellschaft Martini & Huneke m.b.H., Berlin.
565,844. **Grinding Solid Tires.** B. G. J. Burger, Munich.
566,547. **Apparatus for Making Footwear.** H. C. L. Dunker, Helsingborg, Sweden. Represented by M. Mintz, Berlin.
566,627. **Tool for Vulcanizing Machines.** E. Frohlich, Freiheit b. Osterode.

PROCESS

United States

1,890,081. **Puncture-Proof Inner Tube.** A. L. Freedlander, assignor to Dayton Rubber Mfg. Co., both of Dayton, O.
1,890,345. **Attaching Rubber to Leather.** A. V. Thomas, Hanover, assignor to E. H. Clapp Rubber Co., Boston, Mass.
1,890,424 and 1,890,425. **Brake Lining.** H. Whitworth, assignor to Colt's Patent Fire Arms Mfg. Co., both of Hartford, Conn.
1,891,027. **Artificial Leather.** G. A. Richter, assignor to Brown Co., both of Berlin, N. H.
1,891,197. **Cleaning Molds.** G. G. Andrews, assignor to Goodyear Tire & Rubber Co., both of Akron, O.
1,891,407. **Carbonaceous Substance Activation.** A. Godel, assignor to Societe de Recherches & d'Exploitations Petroliferes, both of Paris, France.
1,891,491 and 1,891,492. **Inflatable Boat.** A. V. Anderson, Beacon, assignor to New York Rubber Corp., New York, both in N. Y.
1,892,085. **Decorated Molded Rubber.** J. Stein, Brooklyn, N. Y.
1,892,505. **Shock Insulating Device.** E. R. Evans, Detroit, Mich.

Dominion of Canada

327,947. **Treating Textile Thread.** J. E. C. Bongrand, Paris, and L. S. M. Lejeune, Wasquehal (Nord), co-inventors, both in France.
328,153. **Concrete Paving Block.** Universal Rubber Paviors, Ltd., Audenshaw, assignee of A. F. Sexton, Ashton-under-Lyne, Lancashire, England.
328,289. **Treating Pneumatic Article.** Goodyear Tire & Rubber Co., assignee of P. W. Litchfield, both of Akron, O., U. S. A.
328,290. **Gas Impervious Tire Lining.** Goodyear Tire & Rubber Co., Akron, assignee of W. D. Wolfe, Cuyahoga Falls, both in O., U. S. A.

United Kingdom

380,095. **Molding Rubber Article.** A. G. A. Anonima Gomma Affini, Milan, Italy.
380,456. **Floor Covering.** Linoleum Mfg. Co., Ltd., and A. A. Godfrey, both of London.
380,802. **Molding Conveyer Belt.** Continental Gummi-werke A. G., and A. Loges, both of Hannover, Germany.
381,525. **Air Cushion.** I. and L. Dorogi and Dr. Dorogi Es Tarsa Gummigyar R. T., all of Budapest, Hungary.
381,596. **Sieve.** Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands, assignee of Magyar Ruggyantaarugyar, Budapest, Hungary.
381,611. **Solid Tire.** S. B. Woolf, London.

Germany

565,351. **Porous Rubber Objects.** Société Belge du Caoutchouc-Mousse, Berchem-Ste-Agathe, Belgium. Represented by B. Kugelmann, Berlin.
566,589. **Making Footwear.** H. C. L. Dunker, Helsingborg, Sweden. Represented by G. Lotterhos, H. Mortensen, and W. von Sauer, all of Berlin.

CHEMICAL

United States

18,691.* **Latex Sterilization.** W. A. Gibbons, Montclair, N. J., assignor to Naugatuck Chemical Co., Naugatuck, Conn.
1,889,327. **Accelerator.** J. A. Bertsch, St. Louis, Mo., assignor to Rubber Service Laboratories Co., Akron, O.

*Reissue.

1,889,331. **Age Resister.** J. R. Ingram, Nitro, W. Va., assignor to Rubber Service Laboratories Co., Akron, O.

1,889,429. **Carbon Black.** W. B. Wiegand, Sound Beach, Conn., and L. J. Venuto, New York, N. Y.

1,889,825. **Softener.** G. Fessel, assignor to Technische Chemikalien-Co. G. m. b. H., both of Halle-on-the-Saale, Germany.

1,889,905. **Core or Mold Binder.** C. M. Saeger, Jr., Bowmanstown, Pa.

1,890,154. **Antioxidant.** J. R. Ingram, Nitro, W. Va., assignor to Rubber Service Laboratories Co., Akron, O.

1,890,165. **Accelerator.** W. Scott, Nitro, W. Va., assignor to Rubber Service Laboratories Co., Akron, O.

1,890,191. **Accelerator.** J. C. Patrick, Trenton, N. J.

1,890,231. **Accelerator.** J. C. Patrick and N. M. Mnookin, both of Kansas City, Mo.

1,890,476. **Latex Composition.** P. C. van der Willigen, assignor of ½ to N. V. Nederlandsche Linoleumfabriek, both of Krommenie, Netherlands.

1,890,578. **Gelling Rubber Latex.** C. Hayes, Sutton Coldfield, and E. W. Madge and F. C. Jennings, both of Erdington, all in England, assignors to Dunlop Rubber Co., Ltd., a British company.

1,890,723. **Chlorinated Rubber Insulation.** M. Deseniss and A. Nielsen, assignors to Firm New-York Hamburger Gummiwaaren Co., all of Hamburg, Germany.

1,890,903. **Heat Plastic Composition.** H. L. Fisher, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,890,916 and 1,890,917. **Age Resister.** W. L. Semon, Silver Lake Village, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,890,924. **Composition.** H. A. Winkelmann, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,891,198. **Accelerator.** A. M. Clifford, assignor to Goodyear Tire & Rubber Co., both of Akron, O.

1,891,743. **Accelerator.** O. Behrend, Nitro, W. Va., assignor to Rubber Service Laboratories Co., Akron, O.

1,892,101. **Rubber Treatment.** H. A. Bruson, Germantown, assignor to Resinous Products & Chemical Co., Philadelphia, both in Pa.

1,892,123. **Adhesive Composition.** W. F. Zimmerli, Fairlawn, and R. S. Havenhill, Akron, both in O., assignors to B. F. Goodrich Co., New York, N. Y.

1,892,167. **Adhesive Composition.** W. L. Semon, Cuyahoga Falls, O., assignor to B. F. Goodrich Co., New York, N. Y.

Dominion of Canada

328,142. **Age Resister.** Swift & Co., assignee of A. Guillaudau, both of Chicago, Ill., U. S. A.

328,188. **Vulcanizable Latex.** J. B. Crockett, Malden, Mass., U. S. A.

328,291. **Accelerator.** Goodyear Tire & Rubber Co., assignee of W. C. Calvert, both of Akron, O., U. S. A.

328,466. **Latex Processing.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of S. M. Cadwell, Leonia, N. J., U. S. A.

328,653. **Crude Rubber Manufacture.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of J. McGavack, Leonia, N. J., U. S. A.

United Kingdom

380,345. **Deactivated Carbon Black.** W. B. Wiegand, Sound Beach, Conn., U. S. A.

380,465. **Latex Rubber Battery Separator.** Chloride Electrical Storage Co., Ltd., and B. Heap, both of Clifton Junction.

380,524. **Latex Composition.** Dunlop Rubber Co., Ltd., London, Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands, and W. H. Paull, Ft. Dunlop.

380,640. **Porous Composition.** Stanley Chemical Co., assignee of H. W. O'Neill, both of E. Berlin, Conn., U. S. A.

380,693. **Coating Composition.** A. Thielmann, Hilden, Rhineland, Germany.

380,703. **Rubber Dispersion.** Flintkote Corp., Boston, Mass., assignee of H. L. Levin, Nutley, N. J., both in the U. S. A.

380,828. **Rubber Paving Composition.** W. T. Siew, Penang, Straits Settlements.

380,898. **Accelerator.** Goodyear Tire & Rubber Co., Akron, assignee of W. D. Wolfe, Cuyahoga Falls, both in O., U. S. A.

380,964. **Artificial Leather Composition.** J. E. Cooper, Kent, and A. E. Lever, Croydon.

380,970. **Compounding Ingredient.** P. Schidrowitz and Bideford Black, Ltd., both of London.

381,126. **Rubber Collar Composition.** F. H. Taber, New Bedford, Mass., U. S. A.

381,161. **Antiager.** Imperial Chemical Industries, Ltd., London, and H. M. Bunbury, J. S. H. Davies, and W. J. S. Naunton, all of Manchester.

Germany

565,845. **Abrasion Resisting Products.** I. G. Farbenindustrie A.G., Frankfurt a. M.

565,917. **Artificial Spongy Masses.** R. O. Herzog, Berlin-Steglitz, and H. Hoffmann, Berlin-Dahlem.

566,725. **Colored Rubber Masses.** I. G. Farbenindustrie, A.G., Frankfurt a. M.

566,726. **Coloring Rubber and Masses.** I. G. Farbenindustrie A.G., Frankfurt a. M.

GENERAL

United States

18,669.* **Bottle Cap and Stopper.** J. U. Duffy, Cleveland, and J. H. Richards, Carrolton, both in O.

18,672.* **Ship's Fender.** C. T. Lyons, Medina, assignor to Durable Mat Co., Seattle, both in Wash.

1,889,098. **Pipe Cleaner.** S. O. Mattison, Colfax, Wis.

1,889,209. **Screw Cap, Bottle Stopper, and Dropper.** L. J. Mazoyer, Baldwin, assignor to Whitall Tatum Co., New York, both in N. Y.

1,889,211. **Brush.** P. Mednick, Brooklyn, N. Y.

1,889,496. **Shaving Brush Kit.** H. R. Priest, Loudonville, O.

1,889,606. **Steam Barrel Cover Closing.** H. Lange, Garbsen, assignor to Firm "Hartsteinwerk Niedersachsen, Gesellschaft mit beschränkter Haftung," Hannover, both in Germany.

1,889,720. **Glass Globe Holder.** G. J. Willman, assignor to Cincinnati Advertising Products Co., both of Cincinnati, O.

1,889,782. **Propeller Ice Eliminator.** W. C. Geer, Ithaca, N. Y.

1,889,799. **Tire.** J. T. Clark, Salt Lake City, Utah.

1,889,809. **Golf Ball Washer.** O. H. Nielsen, Chicago, Ill.

1,890,000. **Telephone Base.** E. Oakley, Los Angeles, Calif.

1,890,036. **Tire Inflation Air Line Chuck.** B. Janus, assignor to Sarnia Air Equipment, Ltd., both of Sarnia, Ont., Canada.

1,890,037. **Golf Club.** H. B. Johnson, Larchmont, N. Y.

1,890,278. **Flexible Coupling.** G. K. Bedur, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,890,286. **Airplane De-icer.** W. C. Geer, Ithaca, N. Y.

1,890,308. **Channel Strip.** J. I. Taylor, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,890,323. **Bottle Protector.** C. W. Glaeser, Youngstown, O.

1,890,332. **Flexible Elastic Coupling.** W. Müller-Keuth, Hannover, assignor to Firm Eisenwerk Wülfel, Hannover-Wulfel, both in Germany.

1,890,347. **Bottle Dropper Closure.** W. Voss, Berlin-Neukolln, Germany.

1,890,482. **Nurser and Nipple.** H. D. Weissberg, New York, N. Y.

1,890,529. **Drill Stem Bearing.** J. J. Santiago, assignor to J. Grant, both of Los Angeles, Calif.

1,890,594. **Inflatable Ball.** A. J. Turner, assignor to Wilson-Western Sporting Goods Co., both of Chicago, Ill.

1,890,726. **Water-tight Explosive Cartridge.** W. R. Farren, Tamaqua, Pa., assignor to Atlas Powder Co., Wilmington, Del.

1,890,795. **Spring.** A. Spencer, London, England.

1,890,890. **Boot.** G. L. Van Dinter and C. Ferrettie, assignors to Mishawaka Rubber & Woolen Mfg. Co., all of Mishawaka, Ind.

1,890,909. **Thermostatic Element.** P. M. Lincoln, Ithaca, N. Y.

1,891,186. **Brake Lining.** C. F. Ogren, assignor to Thermoid Rubber Co., both of Trenton, N. J.

1,891,336. **Wheel.** E. M. T. Ryder, Yonkers, N. Y.

1,891,550. **Golf Club Grip.** G. L. Lawrence, Melrose, assignor to Tyer Rubber Co., Andover, both in Mass.

1,891,566. **Flexible Hinge Ring.** S. W. McKellip, assignor to Philadelphia Storage Battery Co., both of Philadelphia, Pa.

1,891,674. **Rolling Stock.** R. T. Glascodine, London, England.

1,891,794. **Bottle Cap.** M. A. Bobrick, Cleveland Heights, O.

1,891,853. **Tire Fluid Pressure Indicator.** W. Turner, Sheffield, England.

1,891,884. **Undergarment.** G. C. Tanner, Melrose Park, assignor to Friedberger-Aaron Mfg. Co., Philadelphia, both in Pa.

1,891,975. **Tire Puncture Sealer.** M. J. Galvin, assignor of 49% to A. P. Reid and D. D. Bennett, all of Toronto, Ont., Canada.

1,892,037. **Universal Joint.** M. A. Crews, assignor to Budd Wheel Co., both of Philadelphia, Pa.

1,892,068. **Massage Device.** R. J. Metzler, Newark, N. J.

1,892,088. **Pressure Gage.** J. Wahl, Rosedale, and O. Melzer, Hollis, assignors to A. Schrader's Son, Inc., New York, all in N. Y.

1,892,136. **Printing Platen.** P. J. Clark, Longport, N. J.

1,892,157. **Flower Pot.** M. Maier, Port-

* Reissue.

land, Ore., assignor of 1/3 to L. Clark and 1/3 to A. C. F. Wilkins, both of Seattle, Wash.

1,892,369. **Fountain Pen.** G. Tibaldi, Florence, Italy.

1,892,374. **Door Antirattler.** O. C. Ritz Woller, Chicago, Ill.

1,892,481. **Sink Strainer.** C. M. Carlson, assignor to Republic Stamping & Enameling Co., both of Canton, O.

1,892,518. **Glass Run Channel.** J. S. Reid, Shaker Heights, assignor to Reid Products Co., Cleveland, both in O.

1,892,625. **Brake Lining.** C. F. Ogren, assignor to Thermoid Rubber Co., both of Trenton, N. J.

Dominion of Canada

327,254. **Abrasive Article.** Carborundum Co., assignee of R. C. Benner, both of Niagara Falls, N. Y., U. S. A.

327,288. **Fountain Pen.** Mabie, Todd & Co., Ltd., London, England, assignee of E. Verga, Milan, Italy.

327,314. **Garment Supporter.** Russell Mfg. Co., assignee of F. J. Zimmerer, Jr., and H. W. Bauer, co-inventors, all of Middletown, Conn., U. S. A.

327,321. **Playing Ball Valve.** A. G. Spalding & Bros. (Canada), Ltd., Brantford, Ont., assignee of O. A. Savaria, Chicopee, Mass., U. S. A.

327,325. **Storage Battery Separator.** Jos. Stokes Rubber Co., Ltd., Welland, Ont., assignee of M. H. Martindell, Trenton, N. J., U. S. A.

327,328. **Freight Car Truck Absorption Shim.** T. H. Symington & Son, Inc., assignee of T. H. Symington, both of Baltimore, Md., U. S. A.

327,403. **Arch Protector.** J. E. Stagl, Brooklyn, N. Y., U. S. A.

327,479. **Boot.** Mishawaka Rubber & Woolen Mfg. Co., assignee of G. L. Van Dinter and C. Ferrettie, co-inventors, Mishawaka, Ind., U. S. A.

327,576. **Waterproof Joint.** D. McEachern, Duncan, B. C.

327,624. **Pile Fabric.** Collins & Aikman Corp., Philadelphia, assignee of A. W. Drobile, Wayne, both in Pa., U. S. A.

327,647. **Dual Pneumatic Tire.** Goodyear Tire & Rubber Co., assignee of G. A. Handy, both of Akron, O., U. S. A.

327,694. **Marking Device.** United Shoe Machinery Co. of Canada, Ltd., Montreal, P. Q., assignee of H. E. Edwards, Brookline, Mass., U. S. A.

327,716. **Vehicle Spring Suspension.** R. N. Burton, assignee of T. I. Duffy, both of Chicago, Ill., U. S. A.

327,717. **Flexible Spring Connector.** R. N. Burton, Chicago, Ill., assignee of T. I. Duffy, Detroit, Mich., both in the U. S. A.

327,740. **Faucet Connection.** J. E. Conklin, New York, N. Y., U. S. A.

328,005. **Brush.** T. H. Scott, Windsor, Ont.

328,007. **Self-tightening Rubber Body.** W. Stoll, Charlottenburg-Berlin, Germany.

328,039. **Flexible Shaft Coupling.** Canadian Westinghouse Co., Ltd., Hamilton, Ont., assignee of J. W. Carthew, Wilmerding, Pa., U. S. A.

328,056. **Bitumen and Rubber Product.** Philip Carey Mfg. Co., Lockland, O., assignee of E. S. Ross, Cynwyd, Pa., both in the U. S. A.

328,092. **Squeegee Holder.** Marvel Window Cleaner, Inc., assignee of H. T. Barlow, both of Cleveland, O., U. S. A.

328,230. **Shaving Kit.** H. R. Priest, Loudonville, O., U. S. A.

328,299. **Horseshoe Securing Device.** Imperator Hestesko Aktieselskap, Tönsberg, assignee of P. Harsem, Oslo, both in Norway.

328,324. **Tire Valve Seal.** Spicer Airflater, Inc., Cleveland, assignee of D. H. Spicer, Lakewood, both in O., U. S. A.

328,394. **Floor Covering.** J. R. Gammeter, Akron, O., U. S. A.

328,396. **Hose.** H. W. Goodall, Aldan, Pa., U. S. A.

328,467. **Gaiter.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of H. P. Manville, New Haven, Conn., U. S. A.

328,472. **Conduit Coupling.** Dunlop Tire & Rubber Goods Co., Ltd., assignee of G. A. Ansell, both of Toronto, Ont.

328,568. **Scraper-mat Device.** C. F. Barker, Victoria, B. C.

328,569 and 328,570. **Mat.** C. F. Barker, Victoria, B. C.

328,574. **Cushion Tire.** J. Brunswick, Seine, France.

328,587. **Golf Club.** P. E. Heller, Newark, N. J., U. S. A.

328,605. **Pessary.** W. Leonhardt, Wismar in Mecklenburg, Germany.

328,618. **Adhesive Material.** W. M. Scholl, Chicago, Ill., U. S. A.

328,657. **Airplane Gear Shock Absorber.** Les Etablissements Ch. Faure-Roux, assignee of C. Faure-Roux, both of St.-Chamond, Loire, France.

United Kingdom

377,422. **Pipe Coupling.** Leyland & Birmingham Rubber Co., Ltd., Lancashire, and A. E. Beach, London.

378,622. **Submarine Lifesaving Buoy.** F. Gniwodda, Sandkrug, Germany.

378,837. **Railway Wheel.** L. Rado, Berlin, Germany.

378,852. **Pneumatic Tire.** E. B. Killen, London.

379,116. **Pneumatic Tire.** F. G. Carnahan, Akron, O., U. S. A.

379,445. **Inflatable Body Attachment.** H. Lord, Edinburgh, Scotland.

379,521. **Tire Pressure Gage.** W. Turner, Sheffield.

379,577. **Tire.** L. Harter, Dresden, Germany.

379,925. **Railway Vehicle Tire.** Michelin & Cie., Puy-de-Dome, France.

379,941. **Cable.** Felten & Guilleaume Carlswerk A. G., Cologne, Germany.

380,113. **Cable.** General Cable Corp., New York, assignee of H. H. Webber, Rome, both in N. Y., U. S. A.

380,163. **Pneumatic Tire.** A. C. Stevenson, Hampshire.

380,230. **Floor Covering.** H. B. S. and H. S. Toone, both of Nottingham.

380,267. **Pen Stand.** Namiki Mfg. Co., Ltd., London. (Kabushiki Kaisha Namiki Seisakusho, Tokyo, Japan.)

380,285. **Pneumatic Tire.** M. Fonderie, Condé sur Escaut, France.

380,310. **Brake Lining.** Colt's Patent Fire Arms Mfg. Co., assignee of H. Whitworth, both of Hartford, Conn., U. S. A.

380,418. **Tire Tread Nonskid Element.** N. E. Brookes, London. (Respats, Inc., Cranston, R. I., U. S. A.)

380,492. **Vibration Damper.** Budd Wheel Co., Philadelphia, Pa., assignee of R. H. Rosenberg, Detroit, Mich., both in the U. S. A.

380,516. **Conductor.** Hart Bros. Electrical Mfg. Co., Ltd., and A. Hart, both of Middlesex.

380,714. **Fountain Pen.** R. Einsele, Pforzheim, Germany.

380,776. **Armored Cable.** Felten & Guilleaume Carlswerk A. G., Cologne, Germany.

380,792. **Paving Slab.** G. W. Beldam, Middlesex.

380,960. **Toy.** M. Wittmann, New York, N. Y., U. S. A.

381,016. **Stair Tread Nosing.** Leyland & Birmingham Rubber Co., Ltd., and G. C. Summerfield, both of London.

381,027. **Loose-Leaf Binder.** Morland & Impey, Ltd., and W. Shewell, both of Birmingham.

381,125. **V-Belt.** L. Rado, Berlin, Germany.

381,220. **Rubber-set Brush.** W. E. Smith, Middlesex.

381,295. **Rotary Brush.** T. Chandler, Sheffield.

381,365. **Tire Tread.** M. Banyai, Pottendorf, Austria.

Germany

565,511. **Atomizer.** J. Patou, Paris, France. Represented by A., F., and A. Weickmann, all of Munich.

565,632. **Syringe.** H. Pfau, Berlin.

565,872. **Self-closing Tire Tube.** W. Stoll, Berlin-Charlottenburg.

TRADE MARKS

United States

298,292. Representation of a still enclosed in a hexagon. Adhesive. Naugatuck Chemical Co., New York, N. Y.

298,318. **Texide.** Pessaries. L. E. Shunk Latex Products, Inc., Akron, O.

298,329. **Queen Royal.** Golf balls. United States Rubber Co., New York, N. Y.

298,351. **Asepto.** Syringes. Becton, Dickinson & Co., Rutherford, N. J.

298,373. Representation of a winged foot and the word: **"Goodyear."** Auto top dressing. Goodyear Tire & Rubber Co., Akron, O.

298,421. Circle containing representation of a bell outlining the face of a boy, and the word: **"Bel-Ball."** Balls. C. B. Webb Co., New York, N. Y.

298,448. Representation of a landscape and a dirigible and the words: **"Sold by Druggists Only, Tourists Tubes, They'll Circle the Globe."** Prophylactic articles. W. W. Wyant, doing business as Akron Rubber Supply Co., Akron, O.

298,481. **Laytex.** Wire. United States Rubber Co., New York, N. Y.

298,489. **Thermolectric.** Tire repair vulcanizing apparatus. Firestone Tire & Rubber Co., Akron, O.

298,543. **Speedway.** Hose. Goodyear Tire & Rubber Co., Akron, O.

298,546. **Dispatch.** Tires. Kelly-Springfield Tire Co., New York, N. Y.

298,555. **Dura-Lite.** Hose. Goodyear Tire & Rubber Co., Akron, O.

298,563. **Tensilastic.** Rubber thread. Para Thread Co., Inc., Woonsocket, R. I.

298,584. **Spunjy-Lastik.** Sponge rubber. Sponge Rubber Products Co., Derby, Conn.

298,592. **Wham.** Golf balls. Sun Radio, Inc., Akron, O.

298,685. Word: **"Proof"** superimposed upon the word: **"Shudder."** Machinery vibration eliminating supports. Rubber Shock Insulator Corp., Bridgeport, Conn.

298,686. Representation of a section of a belt. Belting. United States Rubber Co., New York, N. Y.

298,779. Label bearing the words:

"The Pharis, Certificate." Tires. Pharis Tire & Rubber Co., Newark, O.
298,839. **Kindergarters.** Garters. I. B. Kleinert Rubber Co., New York, N. Y.
298,916. **Sleepy Head.** Crib sheets. United States Rubber Co., New York, N. Y.
298,917. Representation of a still. Rubber ink. Naugatuck Chemical Co., New York, N. Y.
298,963. **The Creative Printer.** Rubber stamps and hectographs. Classroom Teacher, Inc., Chicago, Ill.
298,964. **The Cooperative Printer.** Rubber stamps and hectographs. Classroom Teacher, Inc., Chicago, Ill.
298,965. **The Classroom Printer.** Rubber stamps and hectographs. Classroom Teacher, Inc., Chicago, Ill.
298,985. **Belinde.** Toys. "Semperit" Oesterreichisch-Amerikanische Gummiwerke A.G., Vienna, Austria.
298,987. Representation of the cuff of a glove. Surgeon's gloves. B. F. Goodrich Co., doing business as Miller Rubber Co., Inc., New York, N. Y.
299,066. Double-bordered diamond. Prophylactic articles. Youngs Rubber Corp., Inc., New York, N. Y.
299,151. **Duchess.** Golf and tennis balls. Harrison Wholesale Co., Chicago, Ill.
299,303. Representation of Mercury carrying a roller. Rollers. Rapid Roller Co., Chicago, Ill.
299,310. **Anchor Phone** and the word: **"Phone"** superimposed upon an anchor. Telephone bases. Anchor Sales Co., Los Angeles, Calif.
299,414. **Sun-Air.** Footwear. B. F. Goodrich Co., New York, N. Y.
299,415. **Xtrulock.** Footwear. Hood Rubber Co., Inc., Wilmington, Del.
299,423. **Sanisole.** Footwear. Firestone Footwear Co., Hudson, Mass.
299,431. **"El Toro."** Prophylactic articles. Latex Laboratories, New York, N. Y.
299,460. **Certex.** Prophylactic articles. Certex Corp., Kansas City, Mo.
299,465. **Premek.** Accelerator and latex stabilizer. Premier Mill Corp., Geneva, N. Y.
299,500. **Napoleons.** Prophylactic articles. Killian Mfg. Co., Akron, O.
299,501. **Derbies.** Prophylactic articles. Killian Mfg. Co., Akron, O.
299,502. Representation of a length of cable. Insulated wire and cable. Okonite Co., Passaic, N. J.
299,525. **Streamline.** Tires and tubes. General Tire & Rubber Co., Akron, O.
299,540. **Ducky.** Dolls. Ideal Novelty & Toy Co., Brooklyn, N. Y.
299,545. **Aiken.** Wearing apparel. Russeks Fifth Ave., Inc., New York, N. Y.
299,548. **Dobbs.** Raincoats. Hat Corp. of America, S. Norwalk, Conn.
299,553. **Compacto.** Fountain syringe. Seamless Rubber Co., Inc., New Haven, Conn.
299,558. **Autocap, Saves Time and Tires.** Valve caps. E. B. Moore, doing business as Emvir Mfg. Co., Chicago, Ill.
299,573. **Mogul.** Carbon black. Godfrey L. Cabot, Inc., Boston, Mass.
299,597. **Belinde.** Stationer's goods. "Semperit" Oesterreichisch-Amerikanische Gummiwerke A. G., Vienna, Austria.
299,707. **Lone Rock.** Mechanical goods. Wm. L. McLellan Co., Norwalk, Conn.
299,722. **Jaco-T-Mats.** Matting. O. W. Jackson & Co., Inc., New York, N. Y.
299,758. Octagon containing the letter: **"I."** Tires, tubes, and repair materials. India Tire & Rubber Co., Akron, O.
299,762. **Chervel.** Raincoats, etc. Archer Rubber Co., Milford, Mass.
299,775. **Bonus.** Heels and soles. Bradstone Rubber Co., Woodbine, N. J.
299,777. Representation of a shield bearing the word: **"Goal."** Heels and soles. Bradstone Rubber Co., Woodbine, N. J.
299,778. **March King.** Heels and soles. Bradstone Rubber Co., Woodbine, N. J.
299,791. Representation of a winged foot and the word: **"Goodyear."** Storage batteries. Goodyear Tire & Rubber Co., Akron, O.
299,792. **Okosheath.** Insulated wire and cables. Okonite Co., Passaic, N. J.
299,793. **Okolast.** Insulated wire and cables. Okonite Co., Passaic, N. J.
299,794. **Okocord.** Insulated wire and cables. Okonite Co., Passaic, N. J.
299,876. **Talking.** Golf balls. Talking Golf Ball Co., Chicago, Ill.
299,907. Label bearing the words: **"Davis Air-Giant."** Tires. Western Auto Supply Co., Kansas City, Mo.

Greetings, Calendars, and Souvenirs

The staff of India Rubber World gratefully acknowledges the following holiday souvenirs:

A steel rule in a circular metal case was the very serviceable remembrance of The Akron Equipment Co., E. Exchange St., Akron, O.

Pocket memorandum books containing information and maps of value were provided by John Royle & Sons, Paterson, N. J.; and E. T. Trotter & Co., 594 Johnson Ave., Brooklyn, N. Y.

John C. Carew, of Lincoln Rubber Co., Ltd., Premier House, 150 Southampton Row, London, England, sent a useful telephone index pad.

Beautiful cards bearing Christmas and New Year greetings were received from Godfrey L. Cabot, Inc., 940 Old South Bldg., Boston, Mass.; The Cleveland Liner & Mfg. Co., Cleveland, O.; H. W. Maxson, R. F. Snyder, and R. E. Powers, all of The B. F. Goodrich Co., Akron; H. Hentz & Co., New York Cotton Exchange Bldg., Hanover Sq., New York, N. Y.; Frederick J. Maywald, Carlstadt, N. J.; The Oak Rubber Co., Ravenna, O.; R. R. Olin Laboratories, Akron; John Robertson Co., Inc., 131 Water St., Brooklyn; Ibrahim I. Saad & Fils; Shiraishi Kogyo Kaisha, Ltd., Osaka, Japan; James H. Stedman, 5550 Cote St. Luc Rd., Montreal, Canada; Rubber Division, United States Bureau of Foreign and Domestic Commerce, Washington, D. C.; and H. C. Young, "Monkchester," Goldings Hill, Loughton, Essex, England.

Artistic calendars were forwarded by Fremont Tool & Die Co., 432 N. Wood St., Fremont, O.; General Electric Co., Schenectady, N. Y.; Heveatex Corp., Melrose, Mass.; National Rubber Machinery Co., Akron; The Oak Rubber Co.; Sociedad Anonima Fabrica Argentina de Alpargatas, Patricios 1053, Buenos Aires, Argentina; The West Co., 1117 Shackamaxon St., Philadelphia, Pa.; and C. K. Williams & Co., Easton, Pa.

OBITUARY

Machinery Manufacturer

ILL health probably caused Allan R. Hardie, 42, to take his own life by shooting, on January 18 at his home in Garden City, L. I., N. Y. He was secretary-treasurer of John Robertson Co., Inc., machinery manufacturer, 133 Water St., Brooklyn, N. Y. Mr. Hardie leaves his widow and 2 sons.

Former Rubber Man

ON DECEMBER 31 at his home in Akron, O., died Frank E. Holcomb from a heart ailment, following an attack of influenza. He was born in Bradford, Conn., January 3, 1867, and later attended Yale Business College, New Haven, Conn.

He worked for the New Haven Carriage Co. and later became branch manager at New York, N. Y., for The B. F. Goodrich Co. Mr. Holcomb then joined the Kelly-Springfield Tire Co. and remained with it 21 years, the last 7 of which were spent as general manager of the plant in Akron. He also served as president and general manager of The Williams Foundry & Machine Co., Akron, from 1918 to 1924. During the last 2 years of his life he was retired from active business because of ill health.

The deceased belonged to the Masons, Elks, Akron City, and Fairlawn Golf clubs.

Surviving are his widow, a son, and a daughter.

Raybestos Executive

AT HIS home in Bridgeport, Conn., on January 17, Howard C. Simpson, vice president of Raybestos-Manhattan, Inc., died from a heart ailment from which he had suffered several years. He was born in Pittsburgh 63 years ago. Prior to joining Raybestos in 1915 he had been superintendent of production, Chalmers Motor Co., and production manager, Hupmobile Co.

Mr. Simpson is survived by his wife; 3 brothers, including Sumner Simpson, Raybestos president; and 2 sisters.

Rubber Stores Owner

ALBERT S. HAYWARD, 46, owner of the Hayward Rubber Co. stores at Providence and Pawtucket, both in R. I., died suddenly in Boston, Mass., last month while on a business trip. He was born in Providence where he attended the public schools, and during the World War served in the United States Navy. He became head of the stores at the death of his father, Clarence, founder of the company.

Surviving are his sister and 2 aunts.

Rubber Broker

FRED L. MOSES, 62, Boston, Mass., rubber broker for many years and salesman for Geo. A. Alden & Co., over 30 years ago, died January 16 at the Deaconess Hospital, Boston. He was born in Freedom, N. H.

He belonged to the Masons and the Veteran Assn. of the Lawrence Light Guard.

Mr. Moses leaves a wife and a daughter. The funeral was from his home in Malden, burial was in Oak Grove Cemetery.

Market Reviews

CRUDE RUBBER

PRICES on the Rubber Exchange broke through 3¢ in the last month under disappointing statistics from producing and consuming centers. December consumption of 16,990 tons was about 1,000 tons under expectations; while imports showed no signs of slacking, thus adding another block of rubber to the already formidable stocks on hand in this country.

Malay, Ceylon, and estate production in the Far East was reported unusually high; and though the year-end figures show a decline, the drop is small and promises no immediate relief.

The United States figures show a decline of 20.2% in the year's receipts from Malay, compared with a drop of 10% in consumption. But total Malay exports were only 8% lower so that if our manufacturers had not been so well supplied with rubber, the decline in consumption would have more than offset the drop in imports.

What the automobile industry will contribute to business recovery is hard to say. R. G. Dun & Co. believes that sales for the first half of 1933 will parallel those of 1932, but in the last half they will increase measurably.

The Outside Market continued its apathetic course for most of the month, but on the decline in price that followed publication of the December consumption figure manufacturers bought rubber in greater quantities than for some time. Like in every other industry, rubber manufacturers are waiting for the political stage to change.

Week ended December 31, 1932. The last week of the old year in the rubber market was typical of many many others that preceded it; it did not rise out of its lethargy for even one feeble gesture. After turning the page of the unsatisfactory year that is now behind us, a little optimism is justified, however, and perhaps the old cry of "it can't get much worse" will at last show results. Maybe the automobile men will lead the way; or maybe it will be the smaller manufacturers who have been able to adjust themselves quickly to every turn in price.

RUBBER BEAR POINTS

1. **Malay shipments in December were 40,118 tons against 40,098 for November, and 35,741 in December, 1931.**
2. **Only 16,990 tons of crude rubber were consumed in December, compared with 21,910 long tons in November and 21,409 in December, 1931.**
3. **December Ceylon shipments were 5,169 tons, compared with 4,450 tons in November and 6,891 in December, 1931.**
4. **Automobile output in the United States and Canada for the 11 months of 1932 to November 30 was 1,323,964 units against 2,348,386 for the same period in 1931. January automobile production declined sharply from December as manufacturers completed dealers' stocks of new models.**
5. **Domestic stocks of crude rubber on December 31 climbed again to 388,229 long tons, against 377,966 at the end of November and 322,825 on December 31, 1931.**
6. **Pneumatic casings shipped in November were 4.9% under October and 40.7% under November, 1931. Production was also lower; and inventories increased.**
7. **Total Malayan exports in 1932 dropped only 8% from 1931.**
8. **Far East production on large and small estates for December was 40,934 tons against 34,031 in November and 39,837 tons in December, 1931.**

RUBBER BULL POINTS

1. **Crude imports in December at 28,567 tons, while 5.6% above those of November, were 45% less than in December, 1931.**
2. **United States rubber imports from British Malaya dropped 20.2% during 1932.**
3. **Ceylon exports during 1932 declined about 19%.**
4. **Crude rubber afloat for the United States on December 31 totaled 38,360 long tons against 40,879 on November 30, 1932, and 40,455 on December 31, 1931.**
5. **Stocks at Singapore and Penang on December 31 were 31,286 tons against 51,800 at the same time a year ago.**

The present week, cut into by the holiday on Monday and Saturday, was further handicapped by the fact that primary centers were still closed on Tuesday in observance of the Christmas holiday. In the very short week, nothing important happened. Much evening up of accounts for the year-end was in evidence, but not much else.

Price changes were negligible. Quotations were unchanged to 4 points lower. The January contract was unchanged at 3.18¢; March 3.25 against 3.26; May 3.33 unchanged; July 3.40 against 3.41; and October 3.53 against 3.56.

Now come rumors that the British Government would be sympathetic to constructive action in the Far East that would be beneficial to the rubber industry. Native production seems to be the greatest obstacle, and experts in the field are devoting considerable study to the problem.

American opinion seems to be: "Material improvement in conditions and prices is placed chiefly in the possibility of increased consumption through broader automobile distribution during the coming year and of replacement demand for tires though it is the consensus of opinion that more depends on world economic conditions than on conditions within the commodity itself . . ," according to the weekly letter from Lamborn & Hutchings, written by C. S. Moora.

Chevrolet output was cut sharply last week, but other producers increased their production so that *The New York Times'* index for December 24 stands at 69.9 against 72.4 for the preceding week and 39.8 for the corresponding week in 1931. Ford is working on his improved 8-cylinder model, and De Soto, Hudson-Essex, Rockne, Pontiac, Oldsmobile, Packard, and Cadillac-La Salle are forging ahead, helping to offset the decrease of 10,000 units in the Chevrolet schedule.

Business in the Outside Market was even deader than the proverbial door nail. Added to the hand-to-mouth buying is the fact that many factories are closing down for inventory and stock taking.

Prices did not change from last week. January was quoted at 3¼¢ on ribbed smoked sheets; February-March 3 5/16; April-June 3 7/16; July-September 3 9/16; and October-December 3 11/16.

Week ended January 7, 1933. The market hardly got under way last week when it was time for week-end covering and evening up. In the 4 days of trading the market held up well in spite of several unfavorable factors in regard to the statistical position of rubber. The firmness of prices was helped somewhat by the advance in the outside markets and talk of inflation by Congress.

Quotations advanced from 2 to 6 points in the short week—Monday was the New Year's holiday, and on Saturday the Exchange was closed because of the death of Calvin Coolidge.

The January position closed at 3.20¢

New York Outside Market—Spot Closing Rubber Prices—Cents per Pound

	December, 1932						January, 1933																
	26*	27	28	29	30	31*	2*	3	4	5	6	7	9	10	11	12	13	14	16	17	18	19	20	21
Ribbed Smoked Sheet	...	3¼	3¼	3¼	3 3/16	...	...	3 3/16	3 3/16	3 3/16	3¼	3¼	3¼	3 3/16	3 3/16	3⅛	3⅛	3 1/16	3	2 15/16	2 15/16	3	3	3
No. 1 Thin Latex Crepe	...	3 13/16	3 13/16	3 13/16	3 13/16	...	...	3 13/16	3 13/16	3 13/16	3⅞	3⅞	3⅞	3 13/16	3 13/16	3¾	3¾	3 11/16	3 11/16	3⅝	3⅝	3 11/16	3 11/16	3 11/16
No. 1 Thick Latex Crepe	...	3 13/16	3 13/16	3 13/16	3¾	...	...	3¾	3¾	3¾	3 13/16	3 13/16	3 13/16	3¾	3¾	3 11/16	3 11/16	3⅝	3 9/16	3½	3½	3 9/16	3 9/16	3 9/16
No. 1 Brown Crepe	...	2 15/16	2 15/16	2 15/16	2 15/16	...	...	2 15/16	2 15/16	2 15/16	3	3	3	2 15/16	2 15/16	2⅞	2⅞	2 13/16	2 9/16	2½	2½	2 9/16	2 9/16	2 9/16
No. 2 Brown Crepe	...	2⅞	2⅞	2⅞	2 13/16	...	...	2 13/16	2 13/16	2 13/16	2⅞	2⅞	2⅞	2 13/16	2 13/16	2¾	2¾	2 11/16	2½	2⅜	2⅜	2 7/16	2 7/16	2 7/16
No. 2 Amber	...	2 15/16	2 15/16	2 15/16	2 15/16	...	...	2 15/16	2 15/16	2 15/16	3	3	3	2 15/16	2 15/16	2⅞	2⅞	2 13/16	2 9/16	2½	2½	2 9/16	2 9/16	2 9/16
No. 3 Amber	...	2⅞	2⅞	2⅞	2 13/16	...	...	2 13/16	2 13/16	2 13/16	2⅞	2⅞	2⅞	2 13/16	2 13/16	2¾	2¾	2 11/16	2½	2⅜	2⅜	2 7/16	2 7/16	2 7/16
No. 4 Amber	...	2¾	2¾	2¾	2 11/16	...	...	2 11/16	2 11/16	2 11/16	2¾	2¾	2¾	2 11/16	2 11/16	2⅝	2⅝	2 9/16	2⅜	2¼	2¼	2 5/16	2 5/16	2 5/16
Rolled Brown	...	2½	2½	2½	2½	...	...	2½	2½	2½	2 9/16	2 9/16	2 9/16	2½	2½	2 7/16	2 7/16	2⅜	2¼	2⅛	2⅛	2 3/16	2 3/16	2 3/16

*Holiday.

against 3.18¢ the Friday before; March 3.28 against 3.25; May 3.36 against 3.33; July 3.45 against 3.40; and October 3.59 against 3.53.

Increased production in both Malaya and Ceylon took the market unpleasantly by surprise. December shipments from Malaya totaled 40,118 tons in the face of mid-month estimates of only 37,500 tons. This figure topped the November total of 40,098 tons. and that of December, 1931, of 35,741 tons.

Ceylon shipments for December were 5,169 tons against 4,450 in November and 6,891 tons shipped in December, 1931.

In the face of these 2 large totals the news that stocks at London and Liverpool were expected to decline 1,758 tons for the week gave the market its best day on Friday. This point serves to emphasize the movement that has continued for most of 1932. In Britain the stocks are gradually declining; while in the United States they are increasing. At the close of the year British stocks were about 20% less than at the beginning of the year, but U. S. stocks were almost 18% higher.

As Robert L. Baird points out in the monthly letter of H. Hentz & Co., this shift of stocks "might require European consumers to import from us if any serious falling off in shipments from the primary markets should occur coincident with an increased demand."

The automobile show in New York opened Saturday with the usual fanfare trumpets and advertising. This year manufacturers seem to have beat the gun. Campaigns of the important producers, especially in the low-priced field, were begun early in December so that they are well into their stride by now and can probably meet any increase in demand due to the show, with prompter deliveries than ever before.

The usual backing and filling of prices occurred in the Outside Market. Since the larger manufacturers have from 12 to 15 months' supply of rubber on hand, it can be seen that only the smaller, hand-to-mouth buyers are making commitments at present.

The January position closed the week at $3\frac{5}{16}$¢, compared with $3\frac{1}{4}$¢ the week before; February-March $3\frac{7}{16}$ against $3\frac{5}{16}$; April-June $3\frac{1}{2}$ against $3\frac{7}{16}$; July-September $3\frac{5}{8}$ against $3\frac{9}{16}$; and October-December $3\frac{3}{4}$ against $3\frac{11}{16}$.

Week ended January 14. With private estimates of December rubber consumption ranging between 17,000 and 18,000 tons, the market gradually eased off during the week. When the official figures revealed that only 16,990 tons were consumed, the market hit the low points for the week on Saturday, sending prices to the brink of the 3¢ level.

Losses were from 20 to 23 points. The January contract sold at 3.00¢ at the close, compared with 3.20¢ the week before; March 3.08 against 3.28; May 3.16 against 3.36; July 3.22 against 3.45; October 3.36 against 3.59; and December 3.44 against 3.67.

The December consumption figure was almost 5,000 tons less than the November figure of 21,910 tons, and far below the December, 1931, total of 21,409 tons. For the year 1932 consumption was 313,121 tons, compared with 348,986 tons in 1931.

Imports in December were 5.5% higher than the previous month, or 28,567 tons, but were 45% less than in December, 1931. Domestic stocks increased again to the huge total of 388,229 long tons, against 377,996 tons on November 30, and was 20.3% higher than stocks on December 31, 1931.

Against the decrease of 10% in the year's consumption of rubber can be placed the drop in imports from the various producing centers. Imports from Malaya at 272,066 tons for 1932 were 20.2% less than in 1931. Exports from Malaya to the United Kingdom, the second largest importer, declined about 8% for the year.

But the smaller countries received increased quantities of rubber from this source; so total Malaya exports for 1932 were 478,262 tons against 519,740 in 1931, a drop of about 8%. On this basis the decline is negligible; and before the rubber industry can see the clearing, these figures will have to be cut radically, or consumption increased on the same scale.

Figures from The Rubber Manufacturers' Association, Inc., show that November shipments of pneumatic casings were 1,711,298 units, a drop of 4.9% from October and 40.7% below those in November, 1931. Production dropped 10.3% under October and 7.9% under November, 1931. Inventories at the end of November were 7,454,443 against 6,875,980 at the end of October and 7,919,034 on November 30, 1931.

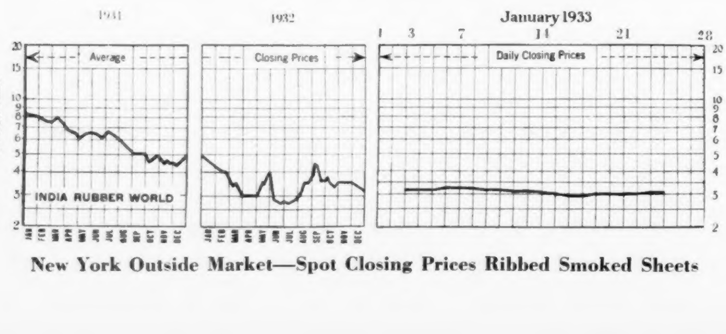
The New York Automobile Show terminated its run on Saturday with all concerned expressing the usual optimism. Reports on actual sales are not yet available. Smaller shows will be held in all the principal cities shortly, and sales figures should reveal what can be expected from this industry.

Dun's review on January 14 reads as follows about the automobile industry: "One of the brightest sections of the industrial field is provided by automobile-manufacturing centers, where schedules are continuing to expand. Virtually every motor company entered the market through the doors of the National Automobile Show at New York this week with complete lines of new automobiles at lower prices than ever before quoted."

The depressing consumption figures were reflected in the quotations in the Outside Market, which declined about $\frac{1}{4}$¢ for the week. The low takings by manufacturers reveal the stagnation in the actuals market; and since most of the rubber is taken from stock, the quiet state of affairs is easily pictured.

The nearby positions for ribbed smoked sheets were at $3\frac{1}{8}$¢, compared with $3\frac{5}{16}$¢ the week before; March $3\frac{5}{16}$ against $3\frac{7}{16}$; April-June $3\frac{1}{4}$ against $3\frac{1}{2}$; July-Septem-

(*Continued on page* 58)



New York Outside Market—Spot Closing Prices Ribbed Smoked Sheets

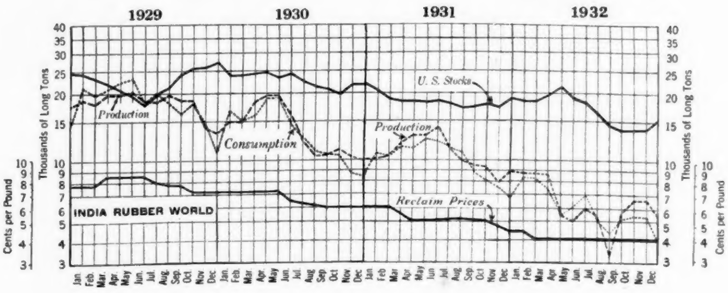
New York Quotations

New York outside market rubber quotations in cents per pound

Plantations	Jan. 26, 1932	Dec. 27, 1932	Jan. 25, 1933
Rubber latex...*gal.*	69	51	42
Sheet			
Ribbed, smoked, spot	$4\frac{1}{4}$	$3\frac{1}{4}$	3
Jan.-Mar.	$4\frac{5}{16}$	$3\frac{3}{8}$	$3\frac{1}{16}$
Apr.-June	$4\frac{7}{16}/4\frac{1}{2}$	$3\frac{1}{2}$	$3\frac{1}{8}$
July-Sept.	$4\frac{11}{16}/4\frac{3}{4}$	...	$3\frac{1}{4}$
Crepe			
No. 1 thin latex, spot	$4\frac{3}{4}$	$4\frac{1}{16}$	$3\frac{3}{4}/3\frac{13}{16}$
Jan.-Mar.	$4\frac{13}{16}$	$4\frac{3}{16}$	$3\frac{13}{16}/3\frac{7}{8}$
Apr.-June	$4\frac{15}{16}/5$	$4\frac{5}{16}$	$3\frac{7}{8}/3\frac{15}{16}$
July-Sept.	$5\frac{1}{8}/5\frac{1}{4}$	...	$4\ /4\frac{1}{16}$
No. 2 Amber, spot.	$4\frac{1}{16}/4\frac{1}{8}$	$2\frac{15}{16}$	$2\frac{9}{16}$
Jan.-Mar.	$4\frac{1}{8}$	$3\frac{1}{16}$	$2\frac{9}{16}/2\frac{5}{8}$
Apr.-June	$4\frac{1}{4}/4\frac{5}{16}$	$3\frac{3}{16}$	$2\frac{11}{16}$
July-Sept.	$4\frac{1}{2}/4\frac{9}{16}$	...	$2\frac{13}{16}$
No. 3 Amber, spot.	$4\ /4\frac{1}{16}$	$2\frac{7}{8}$	$2\frac{1}{2}$
No. 1 Brown......	$4\frac{3}{16}$	$2\frac{15}{16}$	$2\frac{9}{16}$
No. 2 Brown......	$4\frac{1}{8}$	$2\frac{7}{8}$	$2\frac{1}{2}$
Brown, rolled	$3\frac{3}{4}$	$2\frac{9}{16}$	$2\frac{1}{4}$
Paras			
Upriver fine	$5\frac{3}{4}$	6	$5\frac{3}{4}$
Upriver fine	*9	*$9\frac{1}{8}$	*$9\frac{1}{4}$
Upriver coarse ...	†3	...	...
Upriver coarse ...	*$4\frac{7}{8}$	*$4\frac{3}{4}$	*5
Islands fine	†$5\frac{1}{4}$	5	...
Islands fine	*$8\frac{3}{4}$	*$9\frac{1}{8}$	*$9\frac{1}{4}$
Acre, Bolivian fine	$6\frac{1}{8}$	$6\frac{1}{4}$	6
Acre, Bolivian fine	*$9\frac{1}{2}$	*$9\frac{1}{4}$	*$9\frac{1}{2}$
Beni, Bolivian	$6\frac{1}{8}$	$6\frac{3}{8}$	$6\frac{1}{4}$
Medeira fine	6	6	$5\frac{3}{4}$
Pontianak			
Bandjermasin	5	5	$4\frac{7}{8}$
Pressed block	$8\frac{1}{2}$	$6\frac{1}{2}$	$6\frac{1}{4}$
Sarawak	5	$6\frac{1}{2}$	$6\frac{1}{4}$
Caucho			
Upper ball	†3	$2\frac{1}{2}$	...
Upper ball	*$4\frac{7}{8}$	*$4\frac{3}{4}$	*5
Lower ball	†$2\frac{1}{2}$	...	...
Manicobas			
Manicoba, 30% guar.	†$4\frac{1}{2}$	†$2\frac{1}{2}$	†$2\frac{1}{4}$
Mangabiera, thin sheet	†$4\frac{1}{2}$	†$2\frac{1}{2}$	...
Guayule			
Duro, washed and dried	13	12	12
Ampar	14	13	13
Africans			
Rio Nuñez	8	8	8
Black Kassai	8	$7\frac{1}{2}$	$7\frac{1}{2}$
Manihot cuttings...	4	$3\frac{1}{2}$	$3\frac{1}{2}$
Prime Niger flake.	15	15	15
Gutta Percha			
Gutta Siak	$8\frac{1}{2}$	$6\frac{1}{2}$	$6\frac{1}{4}$
Gutta Soh	17	12	$11\frac{3}{4}$
Red Macassar	1.75	1.50	1.50
Balata			
Block, Ciudad Bolivar	19	16	$15\frac{3}{4}$
Manaos block	19	16	$15\frac{3}{4}$
Surinam sheets ...	40	25	$24\frac{3}{4}$
Amber	45	27	$26\frac{3}{4}$

*Washed and dried crepe. Shipments from Brazil. †Nominal.

RECLAIMED RUBBER



Production, Consumption, Stocks, and Price of Tire Reclaim

United States Reclaimed Rubber Statistics—Long Tons

Year	Production	Consumption	Consumption Per Cent to Crude	United States Stocks*	Exports
1930	157,967	153,497	41.5	24,008	9,468
1931	132,462	125,001	35.7	19,257	6,971
1932					
January	8,753	8,440	30.2	18,712	475
February	8,731	8,332	27.6	18,659	484
March	8,613	7,420	26.7	19,726	476
April	5,555	5,561	21.4	21,525	370
May	5,024	6,070	20.8	18,889	188
June	5,923	7,031	18.0	16,870	259
July	5,417	5,131	18.2	16,333	240
August	3,264	4,382	19.6	14,629	147
September	5,308	5,235	23.3	14,059	265
October	6,605	5,494	26.1	13,911	203
November	6,542	5,234	23.9	14,047	226
December	5,626	3,968	23.4	15,202	203

*Stocks on hand the last of the month or year.
Compiled by The Rubber Manufacturers Association, Inc.

DECEMBER statistics do not show up so favorably as was expected, but in comparison with crude rubber figures, the reclaimers held their own. Consumption of crude declined about 22% and that of reclaim about 24%. The ratio, therefore, of reclaim used to crude was held at 23.4%, only slightly below the figure of 23.9% in November.

January business is characterized as "spotty." Here and there a factory will be found that is working night and day to fill a rush order, only to subside to dull routine when it is filled. Mechanicals enjoyed a fair business as a whole; insulated wire was extremely dull since the winter usually brings a let-down in building operations; boots and shoes were quiet; tires and tubes were very dull despite the automobile show and the looked-for replacement demand; automotive accessories were spotty, with operations at both extremes among the various manufacturers.

February prospects seem brighter than those in January. The constructive action between President Hoover and President-elect Roosevelt has helped to clear the doubtful international picture somewhat; and as the time draws near for the end of the lame-duck Congress, manufacturers are expressing the hope that business will improve.

On January 9 the Rubber Reclaimers' Association met at 500 Fifth Ave., New York, N. Y. Clark Harrison was reelected president; William Welch, vice president; and Louis J. Plumb, secretary and treasurer. A round table discussion was held on the consideration of scrap specifications, and a committee was appointed to review existing specifications. The committee will cooperate with the National Waste Dealers' Association if any important changes are contemplated. The reclaimers all expressed gratification over the fact that there was no tendency to cut prices in the industry.

New York Quotations

January 26, 1933

	Spec. Grav.	Cents per Lb.
High Tensile		
Super-reclaim, black	1.20	5 /5¼
red	1.20	4¾/5
Auto Tire		
Black	1.21	3¾/4
Black selected tires	1.18	4 /4¼
Dark gray	1.35	5 /5¼
White	1.40	6 /6¼
Shoe		
Unwashed	1.60	4¾/5
Washed	1.50	5½/5¾
Tube		
No. 1	1.00	6½
No. 2	1.10	4½/4¾
Truck Tire		
Truck tire, heavy gravity	1.55	5 /5¼
Truck tire, light gravity	1.40	5¼/5½
Miscellaneous		
Mechanical blends	1.60	3 /3¼

RUBBER SCRAP

THE slight increase in business in December was not maintained in January. Activity in all branches of the rubber industry dropped to much lower levels, and scrap rubber went along with the rest. Part of the decline was expected since many factories either shut down for a time or curtailed their activities for the year-end inventories. The warmer weather in the last month affected the boot and shoe industry somewhat adversely; therefore business was not up to the levels enjoyed in the last several months.

Scrap collections were very low. Few collectors are making the rounds, first because of the limited demand for scrap, and second because the low prices hardly produce enough revenue to make it worth a man's while to pick up scrap.

Prices, however, were unchanged for the month. They are too low now, and further cuts in many cases would reduce prices to the vanishing point. The whole business structure seems to have been stalemated during January because of the political uncertainties. The conference between President Hoover and President-elect Roosevelt may help restore the confidence lacking for a return to better business.

BOOTS AND SHOES. For many months the boot and shoe section has been operating at a higher rate than other divisions of the industry, but in January its activity slowed down considerably. The lack of rain and stormy weather affected the footwear manufacturers adversely. However the winter is not yet over, and after inventory readjustments manufacturers may operate again at their former rate.

TIRES AND TUBES. The tire industry seems to have taken little part in the automobile activity preparatory to the automobile show. The winter is normally a dull season for tires, but if reports are true, replacement demand may soon lift this industry out of the doldrums.

MECHANICALS AND HARD RUBBER. Both grades were dull and unchanged.

CONSUMERS' BUYING PRICES
Carload Lots Delivered Eastern Mills
January 26, 1933

		Prices
Boots and Shoes		
Boots and shoes, black	100 *lb.*	$0.75/$0.90
Colored	100 *lb.*	.625 /.75
Untrimmed arctics	100 *lb.*	.50
Inner Tubes		
No. 1, floating	*lb.*	.02¾/.02⅞
No. 2, compound	*lb.*	.01⅜/.01½
Red	*lb.*	.01½/.01⅝
Mixed tubes	*lb.*	.01¼
Tires (Akron District)		
Pneumatic Standard		
Mixed auto tires with beads	*ton*	7.00/ 7.25
Beadless	*ton*	10.25/10.50
Auto tire carcass	*ton*	7.00/ 7.25
Black auto peelings	*ton*	16.00/16.50
Solid		
Clean mixed truck	*ton*	26.50/27.00
Light gravity	*ton*	28.00/29.00
Mechanicals		
Mixed black scrap	*lb.*	.00⅝/.00¾
Hose, air brake	*ton*	7.50 /8.00
Garden, rubber covered	*lb.*	.00⅜/.00⅝
Steam and water, soft	*lb.*	.00⅜/.00½
No. 1 red	*lb.*	.01⅛/.01¼
No. 2 red	*lb.*	.01 /.01⅛
White druggists' sundries	*lb.*	.01¼/.01½
Mechanical	*lb.*	.00¾/.00⅞
Hard Rubber		
No. 1 hard rubber	*lb.*	.06⅜/.06⅝

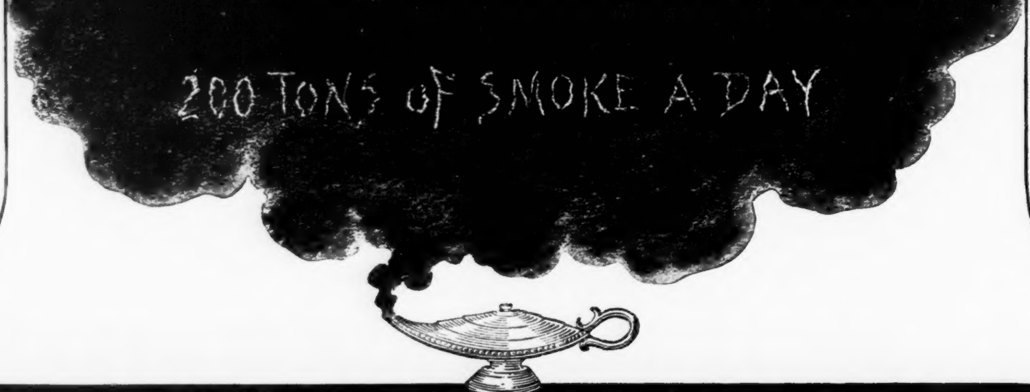
MICRONEX

FOR many years MICRONEX has been produced in greater tonnage than any other carbon black. This unbroken leadership is directly traceable first, to recognized uniform high quality and second, to the contributions MICRONEX is constantly making in solving compounding problems and establishing new standards.

BINNEY & SMITH CO.

Specialists in CARBON BLACKS, STEARIC ACID, IRON OXIDES, MINERAL RUBBER and other products for the RUBBER INDUSTRY

41 East 42nd Street, New York



The Magic Lamp—Your Protection for Over 50 Years

COMPOUNDING INGREDIENTS

WAREHOUSE stocks of tires in the principal tire manufacturing centers are low, and no disposition is evident to replenish them. Under normal conditions these stocks would be built up in December and January for delivery to automobile manufacturers for their spring output. At present tire production in the Akron section is about 25% of capacity. Under these circumstances the demand for compounding ingredients is relatively light and provides only to maintain stocks of moderate proportions.

Accelerators and age resisters of popular brands are steadily in demand because they are virtually indispensable. Despite the general market dullness for the usual run of compounding ingredients prices were quoted firm. The only reductions noted were as follows. Litharge in casks was reduced on December 10, 1932, from 5¾¢ to 5½¢ a pound. On January 23, 1933, both heavy and light rubber solvents were quoted at 5¾¢ a gallon, a reduction of ¼¢ per gallon and applied to tank cars, basis of Group 3 refineries.

Amoras is the trade name of a class of aromatics recently developed for use in rubber clothing, sheetings, sundries, footwear, and specialties.

New York Quotations

January 26, 1933

Prices Not Reported Will Be Supplied on Application

Abrasives			
Pumicestone, pwd.	lb.	$0.02½	/$0.04
Rottenstone, domestic	ton	23.50	/28.00
Accelerators, Inorganic			
Lime, hydrated	ton	20.00	
Litharge, com., pwd., casks	lb.	.05½	
Magnesia, calcined, heavy	lb.	.04	/ .05
carbonate	lb.	.05¾	/ .06
Accelerators, Organic			
Accelerator 49	lb.	.38	/ .48
Aldehyde ammonia	lb.	.65	/ .70
Altax	lb.		
Barak	lb.		
BLE	lb.		
Butene	lb.		
Captax	lb.		
Crylene	lb.		
paste	lb.		
DBA	lb.		
Di-esterex N.	lb.		
DOTG	lb.	.42	/ .52
DPG	lb.	.33	/ .43
du Pont 808	lb.		
833	lb.		
Ethylidine aniline	lb.	.45	/ .47½
Formaldehyde aniline	lb.	.37½	/ .40
Heptene	lb.		
base	lb.		
Hexamethylenetetramine	lb.	.46	/ .47
Lead oleate, No. 999	lb.	.10	
Witco	lb.	.10	
Lithex	lb.		
Methylene dianiline	lb.		
Monex	lb.		
Novex	lb.		
Plastone	lb.		
R & H 40	lb.		
50-D	lb.		
Safex	lb.		
Super-sulphur No. 1	lb.		
No. 2	lb.		
Tetrone A	lb.		
Thiocarbanilid	lb.	.25	/ .27
Thionex	lb.		
Trimene	lb.		
base	lb.		
Triphenyl guanidine	lb.	.58	/ .60
Tuads	lb.		
Vulcanex	lb.		
ZBX	lb.		
Zimate	lb.		
Acids			
Acetic 28% (bbls.)	100 lbs.	2.65	/ 2.90
glacial (carboys)	100 lbs.	9.64	/ 9.89
Sulphuric, 66°	ton	15.50	
Age Resisters			
Age-Rite Gel	lb.		
powder	lb.		
resin	lb.		
white	lb.		
Albasan	lb.		
Antox	lb.		
Neozone	lb.		
Permalux	lb.		
VGB	lb.		
Zalba	lb.		
Antiscorch Materials			
UTB	lb.		
Antisun Materials			
Heliozone	lb.		
Sunproof	lb.		
Binders, Fibrous			
Cotton flock, dark	lb.	.09	/ .11½
dyed	lb.	.50	
white	lb.	.11	/ .15
Rayon flock, white	lb.	1.40	
colored	lb.	1.75	
Colors			
BLACK			
Bone, powdered	lb.	$0.05½	/$0.15
Drop	lb.	.05½	/ .17
Lampblack (commercial)	lb.	.06	/ .08
BLUE			
Blue toners	lb.	.80	/ 3.50
Prussian	lb.	.35	/ .37
Ultramarine	lb.	.07	/ .10
BROWN			
Mapico	lb.	.14	/ .15
Sienna, Italian, raw, pwd.	lb.	.04½	/ .11
GREEN			
Chrome, light	lb.	.23	/ .25½
medium	lb.	.26	/ .27½
oxide	lb.	.19	/ .21
Green toners	lb.	.85	/ 3.50
Guignet's	lb.	.70	
ORANGE			
Cadmium sulphide	lb.		
Orange toners	lb.	.40	/ 1.60
ORCHID			
Orchid toners	lb.	1.50	/ 2.00
PINK			
Pink toners	lb.	1.50	/ 4.00
PURPLE			
Purple toners	lb.	.60	/ 2.00
RED			
Antimony			
Crimson, R. M. P. No. 3	lb.	.46	
Sulphur free	lb.	.48	
7-A	lb.	.32	
Z-2	lb.	.18	
Iron Oxides			
Rub-er-red	lb.	.08¾	
Mapico	lb.	.08½	/ .09
Red toners	lb.	.80	/ 2.00
WHITE			
Lithopone	lb.	.04½	/ .05
Albalith	lb.	.04½	/ .04¾
Cryptone No. 19	lb.	.06	/ .06¼
CB No. 21	lb.	.06	/ .06¼
Grasselli	lb.	.04½	/ .05
Titanium oxide, pure	lb.	.17	/ .18¾
Titanox "B"	lb.	.06	/ .06½
"C"	lb.	.06	/ .06½
Zinc Oxide			
Black label (lead free)	lb.	.05¾	
F. P. Florence, green seal	lb.	.09⅝	/ .09⅞
red seal	lb.	.08⅝	/ .08⅞
white seal (bbls.)	lb.	.10⅞	
Green label (lead free)	lb.	.05¾	
Green seal, Anaconda	lb.	.09⅝	/ .10⅛
Horsehead (lead free) brand			
Selected	lb.	.05¾	/ .06
Special	lb.	.05¾	/ .06
XX	lb.	.05¾	/ .06
green	lb.	.05¾	/ .06
red	lb.	.05¾	/ .06
Kadox, black label	lb.	.09⅝	/ .09⅞
blue label	lb.	.08⅝	/ .08⅞
red label	lb.	.07¼	/ .07½
Lehigh (leaded)	lb.	.0490	/ .0515
Red label (lead free)	lb.	.05¾	
Red seal, Anaconda	lb.	.08⅝	/ .09⅛
Standard (leaded)	lb.	.05½	/ .05¾
Sterling (leaded)	lb.	.05½	/ .05¾
Superior (leaded)	lb.	.05½	/ .05¾
U. S. P. (bbls.)	lb.	.12¾	
White seal, Anaconda	lb.	.10⅞	/ .11⅛
XX zinc sulphide (bbls.)	lb.	.13	
YELLOW			
Chrome	lb.	.15	
Mapico	lb.	.11	/ .12
Ochre, domestic	lb.	.01⅜	/ .02⅜
Yellow toners	lb.	2.50	
Factice—See Rubber Substitutes			
Fillers, Inert			
Asbestine	ton		
Barytes (f.o.b. St. Louis)	ton	$23.00	
Blanc fixe, dry, precip.	ton	70.00	/75.00
pulp	ton	42.50	/45.00
Kalite No. 1	ton		
No. 3	ton		
Suprex white, extra light	ton	60.00	/80.00
heavy	ton	45.00	/55.00
Whiting			
Chalk, precipitated	lb.	.03½	/ .04
Domestic	ton	3.50	/ 5.00
Sussex	ton		
Witco	ton	15.00	
Fillers for Pliability			
Flex	lb.		
Fumonex	lb.	.02½	/ .06
P-33	lb.		
Thermax	lb.		
Velvetex	lb.	.02	/ .05
Finishes			
Mica, amber	lb.	.04	
Starch, corn, pwd	100 lbs.	2.19	/ 2.30
Talc, dusting	ton	20.00	
Pyrax A	ton		
Latex Compounding Ingredients			
Accelerator 552.	lb.		
Aquarex	lb.		
Catalpo	ton		
Colloidal color pastes	lb.		
sulphur	lb.		
zinc oxide	lb.		
Collway sulphur (dry basis)	lb.		
Disinfectants	lb.		
Dispersed Antox	lb.		
Emulsified Heliozone	lb.		
Nekal BX (dry)	lb.		
Neozone L.	lb.		
Tepidone	lb.		
Mineral Rubber			
Genasco (fact'y)	ton	40.00	/42.00
Gilsonite (fact'y)	ton	37.34	/39.65
Granulated M. R.	ton		
Hydrocarbon, hard	ton		
Parmr Grade 1	ton	23.00	/28.00
Grade 2	ton	23.00	/28.00
Mold Lubricants			
Sericite	lb.		
Soapbark (cut)	lb.	.05½	/ .06
Soapstone	ton	15.00	
Oils			
Castor, blown	lb.	.11¼	/ .11¾
Poppy seed oil	gal.	1.55	
Red oil, distilled (bbls.)	lb.	.06	/ .06⅝
Protective Colloids			
Casein, domestic	lb.	.07	/ .07⅛
Reenforcers			
Carbon Black			
Aerfloted arrow black	lb	.02¾	
Arrow specification black	lb.	.03	
Century (works, c. l.)	lb.	.0272	
Certified, Cabot, c. l., f. o. b. works, bags	lb.	.02¾	
c. l., f. o. b. works, cases	lb.	.04¼	
l. c. l., f. o. b. works	lb.	.04¾	
Dense dustless black	lb.	.02¾	
Disperso (works, c. l.)	lb.	.0272	
Dixie brand	lb.	.02¾	/ .06½
Kosmos brand	lb.	.02¾	/ .06½
Micronex	lb.	.03	/ .05
Ordinary (compressed or uncompressed)	lb.	.02¾	/ .07
Clays			
Blue Ridge, dark	ton		
China	ton	7.50	
Dixie	ton		

Langford	ton		
Par	ton		
Perfection	ton	$8.00	/$22.00
Standard	ton	7.50	
Suprex No. 1	ton	8.00	
No. 2, dark	ton	6.50	
Glue, high grade	lb.	.18	/ .25

Reodorant

Amoras A	lb.		
B	lb.		
C	lb.		
D	lb.		
Rodo	lb.		

Rubber Substitutes or Factice

Amberex	lb.	.14¾	
Black	lb.	.06	/ .08
Brown	lb.	.06	/ .12
White	lb.	.07	/ .14

Softeners

Burgundy pitch	lb.	.04	
Emo, brown	lb.	.05	
white	lb.	.07	
Hardwood pitch, c.l.	ton	25.80	
Palm oil (Witco)	lb.	.10	
Palmol	lb.	.08½	
Petrolatum, light amber	lb.	.02½	/ .02⅝
Pine tar	lb.	.28	
Plastogen	lb.		
Rosin oil, compounded	gal.	.40	
Rubtack	lb.	.10	
Tonox	lb.		
Witco Flux	gal.	.10	

Solvents

Benzol (90% drums)	gal.	.25	
Bondogen	gal.		
Carbon bisulphide (drums)	lb.	.05½	/ .12
tetrachloride	lb.	.06¼	/ .09
Dependip	gal.		
Dip-Sol	gal.		
Dryolene, No. 9	gal.		
Petrobenzol	gal.		
Rub-Sol	gal.		
Solvent naphtha 284	gal.		
Stod-Sol	gal.		
Troluoil	gal.		
Turpentine, steam distilled	gal.	.44	/ .45

Stabilizers for Cure

Laurex, ton lots	lb.		
Stearex B	lb.	.07	/ .09
flake	lb.	.06½	/ .08
Stearic acid, dbl. pres'd	lb.	.08	/ .12

Vulcanizing Ingredients

Rubber sulphur	100 lbs.	1.85	/ 2.35
Sulphur chloride, drums	lb.	.06	
Telloy	lb.		
Vandex	lb.		

(See also Colors—Antimony)

Imports by Customs Districts

	November, 1932				November, 1931	
	Rubber Latex		Crude Rubber		*Crude Rubber	
	Pounds	Value	Pounds	Value	Pounds	Value
Massachusetts	474,025	$30,671	4,973,934	$167,365	4,265,123	$205,779
Buffalo	....	....	56,000	1,890	....	....
New York	615,480	30,941	48,627,325	1,739,306	82,933,775	3,995,960
Philadelphia	....	....	190,400	6,845	....	....
Maryland	....	....	3,081,412	100,097	4,206,674	164,290
Virginia	....	....	....	....	671,990	31,586
Georgia	....	....	....	....	168,489	6,518
Mobile	....	....	865,061	27,876	799,680	36,226
New Orleans	....	....	560,000	17,225	....	....
Los Angeles	....	....	4,798,895	147,897	7,539,549	318,789
San Francisco	....	....	134,400	4,317	89,600	3,497
Oregon	....	....	11,200	491	....	....
Ohio	88,242	9,173	....	....	47,218	3,063
Colorado	....	....	1,456,000	50,160	308,000	17,159
Totals	1,177,747	$70,785	64,754,627	$2,263,469	101,030,098	$4,782,867

*Crude rubber including latex dry rubber content.

U. S. Crude and Waste Rubber Imports for 1932

	Plantations	Latex	Paras	Africans	Centrals	Guayule	Manicoba and Matto Grosso	Totals 1932	Totals 1931	Balata	Miscellaneous	Waste
Jan. ...tons	30,847	271	142	38	..	..	..	31,298	37,098	53	731	50
Feb.	30,041	361	144	..	..	..	..	30,546	36,645	98	689	..
Mar.	41,753	335	240	54	..	..	..	42,382	40,338	65	754	25
Apr.	36,390	516	111	..	..	..	..	37,017	46,648	35	421	..
May	32,030	82	81	31	..	..	..	32,224	31,720	72	645	30
June	41,070	290	34	..	..	..	..	41,394	45,776	17	415	..
July	30,822	212	44	..	..	..	..	31,078	41,004	57	505	..
Aug.	33,939	260	20	..	..	..	..	34,219	38,370	25	437	9
Sept.	29,311	95	101	2	..	..	..	29,509	40,505	20	257	..
Oct.	34,652	689	122	10	..	..	..	35,473	41,395	77	531	11
Nov.	26,391	393	291	5	..	..	..	27,080	43,733	96	30	..
Dec.	27,543	484	540	..	..	..	..	28,567	51,931	47	563	..
Total, 12 mos., 1932 ...tons	394,789	3,988	1,870	140	..	..	..	400,787	.....	662	5,978	125
Total, 12 mos., 1931 ...tons	485,621	3,730	5,615	196	1	..	..	.....	495,163	1,278	8,125	186

Compiled from The Rubber Manufacturers Association, Inc., statistics.

CRUDE RUBBER

(*Continued from page* 54)

ber 3⅜ against 3⅝; and October-December 3½ against 3¾.

Week ended January 21. After declining for 7 days in a row, rubber Exchange prices rallied Wednesday on a scarcity of offerings, but declined again at the week-end on disappointing cables and bearish production figures from the Far East. Business was more active during the week, with manufacturers in the market on the declines.

For the week prices dropped from 11 to 15 points. The January position closed at 2.87¢, compared with 3.00¢ the week before; March 2.97 against 3.08; May 3.03 against 3.16; July 3.09 against 3.22; October 3.21 against 3.36; and December 3.31 against 3.44.

December production on large and small estates in the Far East was 40,934 tons, compared with 34,031 in November and 39,387 tons in December, 1931. With consumption at a low ebb, the continued high production figures lend strength to recurrent rumors of governmental restriction.

Automobile production in the January 14 week failed to show the normal seasonal gains, and *The New York Times'* index dropped to 39.8 for that week, compared with 43.2 for the preceding week, and 46.9 for the corresponding week last year. Individual companies showed gains, and Ford seems to be pushing his 1933 plans, but on the whole the tendency is to limit production to the demand.

As is usual when prices decline sharply, manufacturers in the past week appeared in the Outside Market and placed orders for present and future requirements. Orders came principally from the smaller companies who, buying from hand-to-mouth, are able to take advantage of the declines.

The nearby positions on ribbed smoked sheets were quoted at 3¢, compared with 3⅛¢ last week; March 3 1/16 against 3 5/16; April-June 3 3/16 against 3¼; July-September 3 5/16 against 3⅜; and October-December 3 7/16 against 3½.

On Monday, January 23, the rubber market was a few points stronger than on Saturday. Nearby positions sold at 3.02¢; May 3.06; July 3.15; October 3.26; and December 3.34.

Scattered business was placed in the Outside Market, and prices were unchanged from Saturday's close.

Futures closed quiet on January 25, recording a decline of 3 to 7 points from yesterday's closing prices. Nearby rubber sold at 3.04¢; May 3.12; June 3.16; July 3.21; October 3.31; December 3.41. Spot ribs sold for 3.03¢ nominal.

Outside Market futures were: February-March 3⅛¢; April-June 3-5/32; July-September 3¼¢. Ribbed smoked sheet was quoted 3 1/16¢ for spot.

Balata in Waterproofing

Tent cloth, jute, and various fabrics are waterproofed while stretched by dipping them into a solution of balata formed with carbon disulphide or trichlorethylene, including a filler such as zinc oxide, flour, or asbestos powder, for about 1½ minutes, then draining the excess solution, and evaporating the solvent.

COTTON AND FABRICS

FARM legislation put forward to increase basic commodity prices has proved a boomerang as it has been handled by the lame-duck Congress. The domestic allotment plan passed by the House was so altered by amendments that no one would claim responsibility for it. Butterfat, rice, and peanuts were added to the bill when it appeared on the floor of the House.

A group of economic experts who studied the measure declared that in its present form it would cost taxpayers probably $900,000,000; it would demand a vast bureaucratic machine to operate and held no guarantee of reducing acreage.

The truth of this last statement is verified by the fact that in those areas of the South where planting has begun, an increase of from 5 to 10% in cotton acreage is indicated.

But even a foolproof plan for cutting output might not be beneficial. The reason was well expressed by Geo. H. McFadden & Bro. in one of its market letters.

"Supposing that American cotton acreage should be forcibly cut 50%. Then the price of American cotton would advance; the price of foreign growth cotton would also advance, but much less in proportion. Would not this be immediately reflected by a falling off of American cotton exports, a corresponding falling off of consumption of American cotton abroad and a corresponding increase in the consumption of foreign growth cotton abroad?"

Cotton spinners are at a loss how to proceed under the threat of this bill, and until the situation is cleared up definitely the market will probably continue its unstable fluctuations.

Week ended December 31, 1932. In the short session between 2 long holidays the cotton market nevertheless scored advances of from 9 to 14 points. A holding movement in the South contributed to the firmness of the market. Farmers see visions of higher prices later on because of the efforts being made in Congress to pass legislation helpful to the cotton farmer.

The January contract closed on Friday at 5.92¢ compared with 5.78¢ last Friday; March 6.00 against 5.91; May 6.13 against 6.02; July 6.25 against 6.16; October 6.45 against 6.32; and December 6.56 against 6.45.

American cotton used throughout the world in November amounted to about 1,159,000 bales, according to the New York Cotton Exchange Service. In October the figure was 1,168,000 and in November, 1931, 1,022,000. In the 4 months ended November 30 takings were approximately 4,473,000 bales, compared with 4,018,000 in the same period last season and 3,555,000, 2 seasons ago.

The Exchange Service accounted for the increase of 455,000 bales in the 4 months' consumption in 4 ways: the large takings of raw cotton in August when prices rose sharply; consumption of Red Cross cotton turned over by the Government; the low price of our cotton in comparison with foreign growths; and the stimulus given by the inflated Oriental currency.

COTTON BEAR POINTS

1. **The Farm Allotment Bill passed by the House with its uneconomic amendments has raised fears of increased production and expense and created much uncertainty in the cotton cloth industry.**
2. **Consumption of cotton in December was 440,062 bales, compared with 503,722 in November and 415,401 in December, 1931.**
3. **Shipments of cotton cloth in December were 4.9% below production, and mill stocks increased 7.2%. Production also was lower.**
4. **The cotton spinning industry operated at 87.2% capacity on a single-shift basis in December against 96.9% in November.**
5. **Preliminary surveys indicate that farmers plan to increase cotton acreage instead of reducing it.**
6. **Japanese exports of cotton cloth increased almost 50% in the first 5 months of this season, thus increasing competition to American and British manufacturers.**
7. **Cotton cloth sales in the first half of January have not registered the usual seasonal increase, according to *The New York Times'* index.**
8. **The Indian crop is estimated at 4,800,000 bales against 4,168,000 last year.**

COTTON BULL POINTS

1. **For the 5 months of the 1932 season consumption of cotton was 2,340,284 bales against 2,191,017 in the same period in 1931.**
2. **Cotton in consuming establishments on December 31 was 1,520,110 bales against 1,630,719 on December 31, 1931. Public storage cotton was also less.**
3. **Exports in the first 5 months were 4,246,000 bales against 4,037,000 in the first 5 months last season.**
4. **Exports from India for the first 4 months were 488,000 bales, against 628,000 in the same time last year and 988,000 in the same period 2 years ago.**
5. **Unfilled orders of cotton cloth increased 12.9% during December, and sales were 9.9% above production.**
6. **According to the Cotton Exchange Service, "American cotton constitutes 57.9% of the total forwardings of all cotton to English mills so far this season, against 46.4% a year ago, and 47.5%, 2 years ago."**
7. **Year-end statistics reveal that 1932 sales of cotton cloth were 104.8% of production, stocks decreased 26.1% to the lowest end of the year supply on record; and unfilled orders increased 18%.**

WEEKLY AVERAGE PRICES OF MIDDLING COTTON

Week Ended	Cents per Pound
Dec. 31	6.05
Jan. 7	6.23
Jan. 14	6.28
Jan. 21	6.23

In reference to the increase caused by the Red Cross of 500,000 bales of raw cotton for cotton goods and clothing, the Exchange Service estimates that only 50,000 bales additional were used because of these operations. The reason is that goods received by the Red Cross came largely out of manufacturers' stocks, and much of the value of the cotton goods received for raw cotton represented labor costs, "and hence the weight of cotton in the goods delivered by the Red Cross was small in comparison with the weight of cotton delivered by the Red Cross in exchange. The result has been that most of the cotton delivered by the Red Cross in exchange for goods has not been immediately needed by the manufacturers receiving the cotton for use in making goods for the Red Cross."

Mills are beginning to curtail activity for their year-end inventory taking; so *The New York Times'* index of cotton cloth production dropped to 93.1 for the December 24 week, against 97.2 for the preceding week, and 76.4 for the same week last year.

At a meeting of southern governors at Memphis, Tenn., during the week, a plan for 50% curtailment of next year's cotton crop was endorsed by a majority present, including the governors or their representatives from Mississippi, South Carolina, Texas, Tennessee, Louisiana, Alabama, and Oklahoma.

Week ended January 7, 1933. Respecting the death of Calvin Coolidge, practically all of the commodity and stock markets were closed on Saturday.

Monday, being the New Year's holiday, made the second 4-day week in a row. But on at least one day the cotton market roused itself from the holiday lethargy. Gains of 18 to 25 points on Wednesday were responsible for the week's advance of from 15 to 19 points.

At the close on Friday, January sold at 6.11¢, compared with 5.92¢ the Friday before; March 6.16 against 6.00; May 6.25 against 6.13; July 6.40 against 6.25; October 6.60 against 6.45; and December 6.74 against 6.56.

Wednesday's upturn resulted from active buying by commission houses and professionals, with very little hedge pressure, sympathy with developments in stocks and grains, and the Congressional debates that called for "reflation" of the currency.

The Chairman of the House Agricultural Committee, Mr. Jones, presented his plan to Congress for agricultural relief during the week. It was discussed to some degree on the floor, and opinion is growing that it will have a hard time being passed. The greatest objection is to the fact that all the people will be taxed for the benefit of a few. Then the administrative problems likely to arise present further barriers to its adoption.

Exports so far this season were put at 4,264,985 bales by the New York Cotton Exchange Service, compared with 4,144,882 a year ago. Indian exports, on the other hand, were 488,000 bales in the first 4 months against 628,000 in the same period a year ago and 988,000, 2 years ago.

Fertilizer tag sales were reported by the Service to have been greater during this December than for several years. The bulk of the sales, though, were made in the Carolinas; so it is believed they were made for truck crops and tobacco rather than for cotton. Since almost a year's supply of cotton is now on hand, growers are finding little aid from bankers this year in financing their crops.

Cotton cloth output did not show the seasonal decline usual in the last few years; so *The New York Times'* index of production climbed to 93.9 for the December 31 week, compared with 93.1 for the preceding week and 81.7 for the corresponding week a year ago. Mills evidently did not curtail activity for inventories to the extent expected. Christmas business was good in some sections, and reports indicate that several mills have had an increase in unfilled orders and some have business booked through January and February.

Week ended January 14. So mutilated was the Farm Bill Allotment Plan as it passed the House that instead of bolstering cotton prices, it did just the opposite. In fact on Monday, when prospects for the passage of the bill looked dim, prices gained. The improvement continued until Wednesday with the aid of better quotations in stocks and wheat, but on the passage of the bill the market turned downward, barely holding its own for the week.

Final prices were from 1 to 3 points higher than the week before. January was 6.12¢ against 6.11¢; March 6.18 against 6.16; May 6.31 against 6.28; July was 6.43 against 6.40; October 6.62 against 6.60; and December 6.75 against 6.74.

Amid a scene of confusion on the floor, amendments to the Farm Bill included butterfat, rice, and peanuts to the products to be helped by the plan. Not only that, but a group of economic experts published a report estimating that the tax on consumers would amount to $900,000,000, would lead to graft in the complicated Federal machinery necessary to make collections of the tax, it was unsound economically, and probably would be found unconstitutional.

Pointing out that the taxes collected might not equal the bonus paid, the report said: "There is no assured correspondence between the bonus and of the collections of the proposed taxes. In the first place, there would be discrepancies between actual and previously estimated domestic consumption, and it is upon the basis of the latter that the bonus is paid to producers, whereas the taxes are in effect collected on actual domestic consumption. Moreover, the bonus would be paid, not on the commodities of all producers, except in the case of wheat and cotton during the initial marketing period. . . . Furthermore, the yield of the proposed taxes . . . would be most uncertain."

Democratic leaders do not recognize the original bill they proposed, and the feeling is now that it will have little chance of passing the Senate. The market was firm over the week-end, probably reflecting this belief.

The December consumption figures released by the Census Bureau were a little better than at first estimated. The December total was 440,062 bales, compared with 503,722 in November and 415,401 in December, 1931. For the first 5 months consumption was 2,340,284 bales, compared with 2,191,017 for the same period in 1931. In the same 5-month period exports were up about 200,000 bales. Cotton in consuming establishments on December 31 was about 100,000 bales less than at the end of 1931.

Week ended January 21. The fate of the farm allotment plan in Congress was the principal factor governing cotton prices in the last week. Monday the market lost a dozen points because of the filibuster in the Senate and the outlook that no important legislation would be passed. The next day the losses were regained on news that the allotment plan might be confined to wheat only. So it went, up one day, down the next, with the net result negligible.

At the close, prices were from 2 to 6 points lower than in the previous week. January sold at 6.10¢, compared with 6.12¢ the week previous; March 6.12 against 6.18; May 6.25 against 6.31; July 6.37 against 6.43; October 6.56 against 6.62; and December 6.70 against 6.75.

Early planting is getting under way in the Mississippi Valley and Southern Texas. But with hopes of an improvement in farm prices, reports are that cotton acreage is being increased in these areas.

New York Quotations

January 26, 1933

		Cents
Drills		
38-inch 2.00-yd.	yd.	$0.07½
40-inch 3.47-yd.		.04½
50-inch 1.52-yd.		.10½
52-inch 1.90-yd.		.08½
52-inch 2.20-yd.		.07¾
52-inch 1.85-yd.		.08⅝
Ducks		
38-inch 2.00-yd. D. F.	yd.	.07¾
40-inch 1.45-yd. S. F.		.10¾
72-inch 1.05-yd. D. F.		.15
72-inch 16.66-oz.		.16⅝
72-inch 17.21-oz.		.17½
MECHANICAL		
Hose and belting	lb.	.17¾
TENNIS		
52-inch 1.35-yd.	yd.	.11¼
Hollands		
GOLD SEAL		
40-in., No. 72	yd.	.14
RED SEAL		
36-in.	yd.	.11
40-in.		.11½
50-in.		.17½
Osnaburgs		
40-in. 2.34-yd.	yd.	.06⅞
40-in. 2.48-yd.		.06⅜
40-in. 3.00-yd.		.05¼
40-in. 10-oz. part waste		.07¾
40-in. 7-oz. part waste		.05⅝
37-in. 2.42-yd.		.06½
Raincoat Fabrics		
COTTON		
Bombazine 60 x 60	yd.	.07¾
Bombazine 60 x 48		.07¼
Plaids 60 x 48		.07¾
Plaids 48 x 48		.06¾
Surface prints 60 x 60		.08¾
Surface prints 60 x 48		.08½
Print cloth, 38½-in., 64 x 60		.03¼
Print cloth, 38½-in., 60 x 48		.03
SHEETINGS, 40-INCH		
48 x 48, 2.50-yd.	yd.	.05
48 x 48, 2.85-yd.		.04⅜
64 x 68, 3.15-yd.		.04⅝
56 x 60, 3.60-yd.		.04
44 x 48, 3.75-yd.		.03½
44 x 40, 4.25-yd.		.03¼
SHEETINGS, 36-INCH		
48 x 44, 5.00-yd.	yd.	.02⅞
44 x 40, 6.15-yd.		.02¼
Tire Fabrics		
BUILDER		
17¼ oz. 60" 23/11 ply Karded peeler	lb.	.21¾
17¼ oz. 60" 10/5 ply Karded peeler	lb.	.17¾
CHAFER		
14 oz. 60" 20/8 ply Karded peeler	lb.	.21¾
12 oz. 60" 10/4 ply Karded peeler	lb.	.17¾
9¼ oz. 60" 20/4 ply Karded peeler	lb.	.23¾
9¼ oz. 60" 10/2 ply Karded peeler	lb.	.18¾
CORD FABRICS		
23/5/3 Karded peeler, 1$\frac{1}{16}$" cotton	lb.	.23
23/4/3 Karded peeler, 1$\frac{1}{16}$" cotton	lb.	.24
15/3/3 Karded peeler, 1$\frac{1}{16}$" cotton	lb.	.21
13/3/3 Karded peeler, 1$\frac{1}{16}$" cotton	lb.	.20
7/2/2 Karded peeler, 1$\frac{1}{16}$" cotton	lb.	.19
23/5/3 Karded peeler, 1¼" cotton	lb.	.29¼
23/5/3 Karded Egyptian	lb.	.35¼
23/5/3 Combed Egyptian	lb.	.40¼
LENO BREAKER		
8¼ oz. and 10¼ oz. 60" Karded peeler	lb.	.21¾

Farmers apparently intend to plant 5 to 10% more cotton in the Mississippi Valley, and from the Southwest come reports of less wheat being planted, and the possibility that this ground may be put to cotton.

Cloth statistics for December reveal that sales were 109.9% and billings 95.1% of production; stocks increased 7.2%, and unfilled orders 12.9%.

The Census Bureau reported that the cotton spinning industry operated at 87.2% of capacity in December, compared with 96.9% in November and 79.3% in December, 1931.

Cloth buying has been restricted in January because of the uncertainty over the course of commodity prices, and the *Times'* index of cotton cloth production dropped to 93.0 for the January 14 week, against 96.8 for the preceding week and 90.2 for the same week a year ago. The usual seasonal upturn in January sales has not materialized thus far.

The local market opened unchanged on January 25. Business was fairly active at the start with prices lower in response to the easier trading reports from Liverpool and selling in the South. These offerings were absorbed by trade buying and short covering. The close was barely steady at a decline of 1 to 4 points. May sold at 6.33 (high) and 6.26 (low).

Cotton Fabric

Ducks, Drills, and Osnaburgs. Conditions concerning the market for these goods remained essentially unchanged compared with December. A fair demand was maintained. Occasional long-time contracts are being concluded. The market begins to evidence inherent strength, and a gradually increasing demand is expected covering the period between now and spring.

Raincoat Fabrics. The demand for fabrics for spring garments has not yet begun. Selection and preparation of styles is occupying the attention of manufacturers previous to ordering supplies.

Sheetings. The market is calm with very little activity for goods by manufacturers. Prices on 40-inch sheetings of the usual constructions declined fractionally from December quotations; while the prices for 36-inch advanced slightly.

Tire Fabrics. The demand for tire fabrics in January was practically as slow as for December because tire manufacturers were not restocking their warehouses preferring to await the outcome of the influence of the automobile shows of new models rather than assume any risk of overstocking.

Quotations were nominal and unchanged on all grades of tire fabrics: namely, carded Egyptian cords, combed Egyptian cords, and American carded peeler cords

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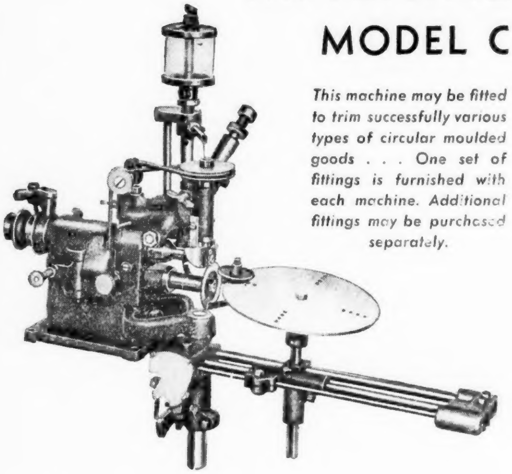
"Barco Swivel Joints." Barco Mfg. Co., 1801-1815 Winnemac Ave., Chicago, Ill. This catalog, designated 253, pictures Barco swivel joints in all their various forms as applied for air and steam connections on platen presses, individual tire and tube vulcanizers, steam jacketed mixers, flap molds, etc.

USMC TRIMMING MACHINE MODEL C

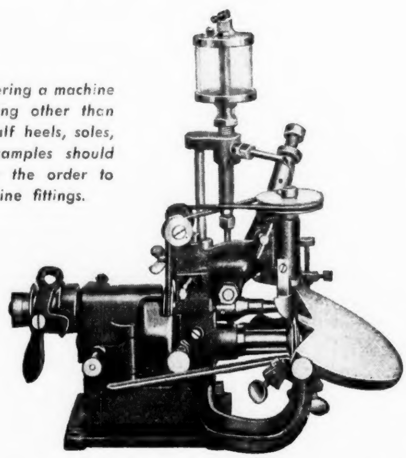


This machine may be fitted to trim successfully various types of circular moulded goods . . . One set of fittings is furnished with each machine. Additional fittings may be purchased separately.

A new and improved machine for trimming the overflow on all types of moulded rubber heels, soles, taps, and miscellaneous moulded rubber goods of similar construction.

Oil is the standard means of lubrication. A water tank is shipped, only when specifically ordered, at an extra charge.

When ordering a machine for trimming other than regular half heels, soles, or taps, samples should accompany the order to determine fittings.



UNITED SHOE MACHINERY CORPORATION

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Auburn, Maine......108 Court
Brockton, Mass......93 Centre
Chicago, Ill..500 South Franklin
Cincinnati, Ohio.407 East Eighth
Haverhill, Mass......145 Essex
Johnson City, N. Y...276 Main
Lynn, Mass........306 Broad
Marlboro, Mass....11 Florence
Milwaukee, Wis..922 No. Fourth
New Orleans, La...216 Chartres
New York, N. Y..110 Fifth Ave.
Philadelphia, Pa..221 No. 13th
Rochester, N. Y......130 Mill
St. Louis, Mo......1423 Olive
San Francisco, Calif. ......859 Mission

Regular and Special Constructions

of

COTTON FABRICS

Single Filling Double Filling

and

ARMY

Ducks

HOSE and BELTING

Ducks

Drills

Selected

Osnaburgs

Curran & Barry

320 BROADWAY

NEW YORK

National Automobile Show

THE Thirty-third Annual National Automobile Show was held under the auspices of the National Automobile Chamber of Commerce in Grand Central Palace, New York, N. Y., January 7 to 14, 1933.

The exposition represents an industry which, during the year 1932, produced motor vehicles, accessories, service equipment, and replacements of parts and tires with a wholesale value of approximately $1,309,500,000. The exhibitors' list included a total of 36 makes of complete cars, of which 29 are passenger vehicle and 7 truck models. About 300 complete cars and chasses were on the 4 floors of the Exposition. A number of these chasses were mechanically operated, exhibiting actual workings of the essential parts while in motion.

The Automobile Industry—1931

Production (U. S. and Canada)	2,472,359
Passenger cars, 2,038,183; Trucks, 434,176	
Registration (U. S.)	25,814,103
Cars, 22,347,800; Trucks, 3,466,303	
Motor vehicle manufacturing business in U. S.	
Capital invested (net tangible assets)	$1,637,907,454
Wages and salaries	$397,207,034
Number employed, direct and indirect	4,030,000
Average life of passenger cars—years	7
Motor vehicles in the world	35,058,000
Proportion of world's motor vehicles in U. S.	74%
American motor output (1931)—% of world's	81%

Rubber Tire Shipments

	1929	1930	1931
High pressure casings	20,184,137	9,967,597	7,455,443
Balloon casings	53,837,041	43,673,788	42,605,248
Solids and cushions	570,372	313,422	209,445
Inner tubes	75,297,737	54,940,293	50,021,469

Total estimated tire shipments for 1932 is 41,150,000

In addition to the complete cars there were several hundred accessory exhibits, also a number of novel features including historic displays as well as the most modern automotive inventions. The 1933 line of cars of every type and model scores a distinct advance over those of 1932 in sales appeal by reason of the speed suggested by stream-lined bodies, added automatic driving control, and economy of operation. These improvements and lower car prices were inspired rather than hindered by the current economic depression.

The engineering value of rubber in automobile construction is now very generally accepted; so each year reveals extensions of its use by car manufacturers for the elimination of vibrations or exclusion of wind and rain from the car body. Nearly all of the research work on rubber and its processing is directed toward improving its service value in every automotive application whereas formerly this work was limited to the development of tires and tubes. The success with which rubber functions in automobiles is indicated by the fact that good tires properly cared for can be consistently depended upon to give over 35,000 miles of wear.

Rubber parts utilized in construction of the chassis, engine supports, etc., is processed to render effective service for the life of the car. This period is said to average over 7 years. The use of rubber for insulating vibrations was greatly enhanced from an engineering point of view by the development of methods for the permanent attachment of rubber to metal. Such combinations are specially valuable to intercept and dampen road shocks on the frame.

One make of car is said to have nearly 250 points at which rubber is utilized in the construction. In another make the weight of rubber used is stated to be 82 pounds. This amount doubtless includes the weight of tires and tubes.

The importance of the automobile industry and its relation to the tire section of the rubber industry is shown in the accompanying tabulation quoted from an official publication.[1] The same authority states that the use of solid and cushion tire equipment on new motor trucks showed continued decrease in 1931. Estimates indicate that only 3.1% of the truck production in that year had solid or cushion tires whereas in 1921 the percentage of commercial vehicles so equipped amounted to 29.8%. Solid tire use is now confined almost exclusively to a limited field of specialized hauling including road construction, excavating, and transporting structural steel and other extremely heavy loads, mostly intra-city hauling.

[1] "Facts and Figures of the Automobile Industry, 1932." National Automobile Chamber of Commerce, New York, N. Y.

R. M. A. Dinner

(*Continued from page 33*)

been general manager for many years, continues in that capacity.

T. W. Miller, president, Faultless Rubber Co., was elected to the directorate to fill the unexpired term of E. H. Broadwell, resigned, formerly of the Fisk Rubber Co. The other directors follow: E. B. Germain, Dunlop Tire & Rubber Corp.; A. B. Newhall; William O'Neil; E. S. Boyer, American Hard Rubber Co.; Herbert E. Smith; W. S. Wolfe, Seiberling Rubber Co.; C. D. Garretson; J. A. Lambert, Acme Rubber Mfg. Co.; and the members of the Executive Committee.

Dividends Declared

Company	Stock	Rate	Payable	Stock of Record
Faultless Rubber Co.	Com.	$0.50 q.	Apr. 1	Mar. 15
Pennsylvania Rubber Co.	6% 1st Pfd.	$1.50 q.	Dec. 31	Dec. 30
Plymouth Rubber Co.	Pfd.	$1.75 q.	Jan. 15	....
Stedman Rubber Flooring Co.	Pfd.	$1.75 q.	Jan. 3	Dec. 27

Low and High New York Spot Prices

	January		
PLANTATIONS	1933*	1932	1931
Thin latex crepe	3⅝/3⅞	4¾/5⅛	8⅛/8⅞
Smoked sheet, ribbed	2$\frac{15}{16}$/3¼	4¼/4¾	7⅞/8½
PARAS			
Upriver fine	6¼	5½/5¾	......

* Figured to January 26, 1933. All prices in cents per lb.

CLASSIFIED ADVERTISEMENTS

SITUATIONS WANTED

RUBBER CHEMIST OR ASSISTANT SUPERINTENDENT, WITH years of practical experience here and abroad, is looking for a new, permanent connection. Familiar with laboratory research development and factory control work. Experienced in the manufacture of tires, tubes, hose, druggists' sundries, coated fabrics, tapes for various purposes, hot and cold plastics, and footwear. At present with large manufacturer of seamless goods, both cement and latex. Very best references. Would go abroad. Address Box No. 168, care of INDIA RUBBER WORLD.

MAN, TWENTY-EIGHT, 6 YEARS' BROAD, PRACTICAL, AND technical experience in rubber industry with large companies. Knowledge compounding. Address Box No. 155, care of INDIA RUBBER WORLD.

SUPERINTENDENT: EXPERIENCED IN THE DEVELOPMENT of cork and rubber, compounding and application. Desires position where the knowledge of same could be applied. Thorough practical experience in compounding and rubber working. Factory management. Home or abroad. Address Box No. 156, care of INDIA RUBBER WORLD.

YOUNG MAN, THOROUGHLY EXPERIENCED WITH GOLF BALL manufacture, from mill room to finished product, desires position as production superintendent. Address Box No. 159, care of INDIA RUBBER WORLD.

CHEMIST, B.SC., AGE 37, MARRIED, 12 YEARS' EXPERIENCE in alkalis, heavy chemicals, organic accelerators and analyses, rubber and rubber reclaiming, etc. Desires permanent position in rubber or allied industry. Address Box No. 160, care of INDIA RUBBER WORLD.

CALENDER AND MILL ROOM FOREMAN, THOROUGH PRACTICAL experience on mechanicals, tires and tubes. Efficient manager with executive ability. At present employed in responsible position with large rubber company. Desires new permanent connection. Best of reasons for seeking change. A-1 references from past and present employers. Would go abroad. Address Box No. 161, care of INDIA RUBBER WORLD.

CHEMIST, B.SC., AGE 43. RUBBER DEVELOPMENT WORK, testing, compounding, processing, and process control. Organic analysis and formula work. Will consider any reasonable offer. Address Box No. 162, care of INDIA RUBBER WORLD.

FACTORY MANAGER AND DEVELOPMENT MAN, EXPERIENCED in both soft and hard rubber mechanicals, calenders, mills, and presses. Knowledge of compounding. Reputed excellent handler of men. Address Box No. 163, care of INDIA RUBBER WORLD.

PRODUCTION OR ENGINEERING SUPERVISOR. ENERGETIC young man with B. S. degree and 12 years' industrial engineering experience, methods development, plant layout, wage incentives, time study, labor standards, rate setting, cost control, production planning, wishes permanent or consulting connection, supervisory, operating, or engineering, with reputable rubber company. Address Box No. 164, care of INDIA RUBBER WORLD.

GENERAL FOREMAN OR ASSISTANT SUPERINTENDENT OF A rubberizing plant, with experience in all kinds of rubberizing. Available at any time. Address Box No. 167, care of INDIA RUBBER WORLD.

Druggist Sundries—Surgical Rubber Goods
Elastic Bands—Tubing—Bladders
Rubber Footwear—Rubber Roll Covering
Hand Made and Molded Specialties

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Molded Specialties.
Washers, gaskets and bushings.
Sponge.

Martin Rubber Co., Inc.
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Walter L. Tepper, President

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MOLDED RUBBER GOODS
We Solicit Your Inquiries
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Genasco Hydrocarbon

A hard, stable compound—produced under the exacting supervision of an experienced and up-to-date laboratory.

Aging tests have proved Genasco to be *always* of uniform quality shipped to all parts of the world in metal drums. Stocks carried at Maurer, N. J. and Madison, Ill.

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are used by the leading rubber manufacturers of the world.
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Rebuilt and New Rubber Mill Machinery of Every Type
GUARANTEED EQUIPMENT — PROMPT SHIPMENT
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We Carry the Largest Stock in the World

(Advertisements continued on page 69)

Rims Approved by The Tire & Rim Association, Inc.

Rim Size	12 Mos., 1931 No.	%	12 Mos., 1932 No.	%
Motorcycle				
24x3	404	0.0	1,146	0.0
28x3	1,437	0.0	....	...
Clincher				
30x3½	31,500	0.3	8,387	0.1
Drop Center				
16x3.62F	......		20	0.0
17x3.00D	10	0.0	402,555	6.7
17x3.25E	35,164	0.3	270,720	4.5
17x3.62F	90,361	0.8	580,662	9.8
17x4.00F	6,359	0.1	106,246	1.8
17x4.19F	25,079	0.2	66,701	1.1
18x2.15B	21,667	0.2	30,992	0.5
18x3.00D	316,017	2.6	1,629,843	27.2
18x3.25E	707,864	5.9	1,174,499	19.6
18x3.62F	111,654	0.9	68,826	1.1
18x4.00F	135,692	1.1	69,209	1.2
18x4.19F	16,840	0.1	38,171	0.6
19x2.15B	8,958	0.1	8,885	0.1
19x2.75D	5,382	0.0	....	...
19x3.00D	5,887,386	48.5	66,330	1.1
19x3.25E	81,224	0.7	3,010	0.1
19x3.62F	6,646	0.0	....	...
19x4.00F	33,703	0.3	....	...
20x2.75D	423	0.0	123	0.0
Semi Drop Base Split Rims				
17x3.00D	28	0.0	....	...
17x3.25E	14,759	0.1		
17x3.62F	9,453	0.1	14,886	0.2
18x3.00D	25	0.0	....	...
18x3.25E	26,241	0.2		
19x3.00D	126,269	1.0	10,468	0.2
19x3.62F	20	0.0	....	...
Flat Base Balloon				
17x3.25E	31,872	0.3		
17x4	94,694	0.8	11,219	0.2
17x4½	164,062	1.4	8,656	0.1
17x5	8,120	0.1	2,727	0.0
18x3.00D	4,207	0.0	....	...
18x3.25E	135,733	1.1	1,193	0.0
18x3½	.....	...	276	0.0
18x4	227,022	1.9	21,058	0.3
18x4½	20,559	0.2	358	0.0
18x5	45,170	0.4	4,561	0.1
18x6	18,783	0.1		
19x2.75D	97,686	0.8	9,119	0.2
19x3.00D	98,454	0.8	1,146	0.0
19x3.25E	4,489	0.0	2,498	0.0
19x3½	5,831	0.0	106	0.0
19x4	452,448	3.8	19,615	0.3
19x4½	284,233	2.4	8,385	0.1
19x5	69,766	0.6	2,003	0.0
19x6	.....	...	204	0.0
20x2.75D	49,832	0.4	8,116	0.1
20x3½	18,281	0.2	17,396	0.3
20x4	31,528	0.3	9,181	0.2
20x4½	19,684	0.2	7,520	0.1
20x5	20,228	0.2	12,109	0.2
20x6	4,569	0.0	3,105	0.1
21x2.75D	2,010	0.0	1,074	0.0
21x3½	73,187	0.6	17,998	0.3
21x4	12,122	0.1	7,430	0.1
21x4½	16,116	0.1	7,720	0.1
21x5	2,066	0.0	157	0.0
21x6	2,522	0.0	995	0.0
22x4	153	0.0	....	...
22x4½	106	0.0	....	...
High Pressure				
30x3½	14,279	0.1	1,496	0.0
32x3½	..	...	1,500	0.0
32x4	5,707	0.0	922	0.0
32x4½	5,197	0.0	....	...
34x4½	197	0.0	433	0.0
18" Truck				
18x5	14,499	0.1	5,270	0.1
18x7	10,736	0.1	5,159	0.1
18x8	1,672	0.0	289	0.0
20" Truck				
20x5	1,895,184	15.6	938,016	15.6
20x6	185,272	1.5	146,970	2.4
20x7	119,146	0.9	63,966	1.1
20x8	66,811	0.5	46,284	0.8
20x9/10	10,698	0.1	5,301	0.1
20x10.50	1,818	0.0	379	0.0
20x11	2,122	0.0	834	0.0
22" Truck				
22x7	2,455	0.0	349	0.0
22x8	9,764	0.1	5,168	0.1
22x9/10	3,626	0.0	4,261	0.1
24" Truck				
24x5	1,933	0.0	..	..
24x6	3,999	0.0	2,690	0.0
24x7	12,192	0.1	7,189	0.1
24x8	41,737	0.3	21,887	0.4
24x9/10	10,516	0.1	7,361	0.1
24x11	671	0.0	400	0.0
Airplane				
18x3	200	0.0	....	...
24x4	109	0.0	....	...
44x10	124	0.0	....	...
Drop Center Tractor Rims				
24x6.00	......	...	162	0.0
24x8.00	......	...	343	0.0
28x8.00	......	...	3	0.0
36x6.00	......	...	42	0.0
Totals	12,136,762	...	6,004,252	...

Tire Production Statistics

	Pneumatic Casings—All Types Inventory	Production	Total Shipments
1930	7,202,750	40,772,378	42,913,108
1931	6,219,776	38,992,220	40,048,552
1932			
Jan.	6,329,417	2,769,988	2,602,469
Feb.	7,337,796	3,096,976	2,042,289
Mar.	7,902,258	2,936,872	2,363,232
Apr.	7,876,656	2,813,489	2,958,104
May	7,502,953	3,056,050	3,406,493
June	3,999,260	4,514,663	8,051,932
July	4,962,285	2,893,463	1,923,276
Aug.	5,327,179	2,471,361	2,123,890
Sept.	4,876,878	2,030,976	2,465,828
Oct.	5,500,784	2,054,913	1,439,309
Nov.	5,963,554	1,842,836	1,369,038

	Solid and Cushion Tires Inventory	Production	Total Shipments
1930	75,871	204,340	250,635
1931	38,815	136,261	167,555
1932			
Jan.	37,327	8,522	9,488
Feb.	37,242	9,754	9,541
Mar.	36,811	8,796	9,205
Apr.	35,816	7,980	8,436
May	35,179	8,026	8,405
June	22,988	11,171	22,474
July	25,218	9,656	7,104
Aug.	24,814	7,728	7,912
Sept.	23,732	6,755	7,868
Oct.	23,620	6,475	6,978
Nov	22,613	5,635	5,810

	Inner Tubes—All Types Inventory	Production	Total Shipments
1930	7,999,477	41,936,029	43,952,139
1931	6,337,570	38,666,376	40,017,175
1932			
Jan.	6,175,055	2,718,508	2,803,369
Feb.	7,007,567	3,056,988	2,182,405
Mar.	7,558,177	2,801,602	2,148,899
Apr.	7,552,674	2,579,768	2,708,186
May	7,130,625	2,727,462	3,093,593
June	4,139,358	4,222,816	7,215,371
July	4,779,814	2,349,761	1,727,750
Aug.	4,901,884	2,198,560	2,002,347
Sept.	4,602,160	2,081,146	2,478,234
Oct.	4,970,898	1,749,188	1,326,824
Nov.	5,329,819	1 604,071	1,262,634

	Cotton and Rubber Consumption Casings, Tubes, Solid and Cushion Tires: Cotton Fabric Pounds	Crude Rubber Pounds	Consumption of Motor Gasoline (100%) Gallons
1930	158,812,462	476,755,707	16,200,894,000
1931	151,143,715	456,615,428	16,941,750,000
1932			
Jan.	12,156,282	36,850,171	1,112,370,000
Feb.	12,518,243	39,472,356	1,071,840,000
Mar.	11,292,363	36,202,474	1,236,942,000
Apr.	11,083,556	35,416,482	1,270,080,000
May	12,044,956	37,681,119	1,326,738,000
June	17,480,486	57,358,548	1,627,920,000
July	11,706,987	38,406,905	1,315,020,000
Aug.	10,115,830	32,984,219	1,478,694,000
Sept.	8,417,417	27,577,826	1,413,720,000
Oct.	8,344,974	27,118,700	1,354,710,000
Nov.	7,827,250	24,411,266	1,272,600,000

Rubber Manufacturers Association, Inc., figures representing 80% of the industry since January, 1929, with the exception of gasoline consumption.

Rubber Trade Inquiries

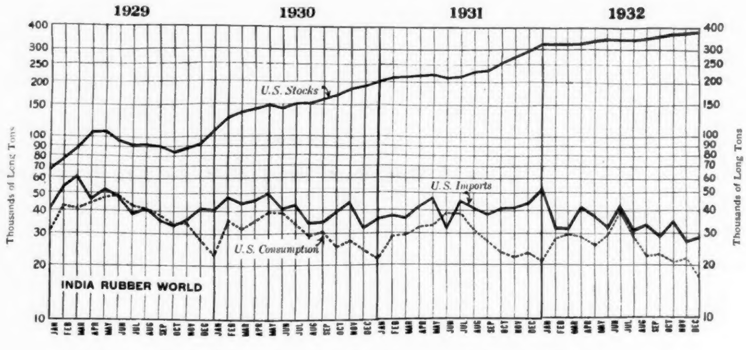
The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.

No.	Inquiry
1566	Manufacturer of rubber printing plates with zinc plates attached.
1567	Manufacturer of rubber body belts.
1568	Manufacturer of small rubber belts.
1569	Information regarding modern methods of printing toy balloons.
1570	Information regarding earliest use of rubber in covering wringer or paper rolls.
1571	Specifications for tubes on milking machines.
1572	Manufacturer of trinitrobenzene.
1573	Manufacturer of rubber ear drum.

New York Outside Market—Low and High Spot Rubber Prices in Cents per Pound—1926-1932

	January	February	March	April	May	June	July	August	September	October	November	December
1926, First latex crepe	71 /92½	57 /70	53½/64	47½/60	47 /50½	41½/45	40¼/44½	37 /41	40¼/42¼	42¼/43¼	38¼/42	36¾/39
Ribbed smoked sheet	70 /91	55½/69	52¾/63	46½/59½	47 /50½	41½/45	40⅛/44½	36¾/41	40 /42¼	42¼/43	38½/42	36¾/39
Upriver fine	62 /83	48 /63	44 /59½	41 /53½	38 /43	34 /37	37 /41	37 /39½	38 /40	38 /39	32½/38	31 /33
1927, First latex crepe	38 /41½	37½/40⅜	40 /42¼	40¾/41¾	41 /41¾	35¼/41	34½/35⅞	34¼/36⅜	33 /34⅜	33⅛/35½	35¼/41¼	39¾/41¾
Ribbed smoked sheet	37¾/41½	37¼/40	39½/42¼	40½/41½	40½/41¼	34¾/40½	34¼/35⅝	34 /36¼	33 /34¼	33 /35½	35⅛/41¼	39¾/41½
Upriver fine	29 /34¼	27¾/32	32 /35	32¼/33	32¼/37	30 /37	29½/31	30 /30¾	28¼/30	27 /28¾	28 /35½	30½/35
1928, First latex crepe	38⅞/41¼	28½/38¼	24¼/29¼	17 /27¾	17½/20⅜	19 /20	19 /20	19¼/20½	18½/19½	19 /20¼	18⅝/19¾	18⅜/19
Ribbed smoked sheet	38⅝/41¼	28½/38	24 /29⅛	16¾/27½	17½/20¼	19⅛/19⅞	18¾/19⅞	18¾/20	17¾/19	18¼/19⅛	17⅝/18⅞	17⅝/18⅛
Upriver fine	29¼/33½	24 /29	21¾/25¼	16¾/24	18⅜/21	20 /23½	21½/23	20½/23	18¾/21	19 /21½	19¼/20½	19¼/20
1929, First latex crepe	18¼/22⅝	22 /27⅜	22¼/26½	20 /23¼	20⅛/24⅛	21⅛/22⅛	21¾/23⅛	20⅞/22⅝	20⅝/21⅜	19¼/21⅜	16½/19⅛	16¼/17⅜
Ribbed smoked sheet	18 /22⅜	21¾/26⅞	21⅝/26⅛	19½/23	19½/23⅝	20 /21½	20⅝/22½	19⅞/21⅜	19⅝/20½	18¼/20⅜	15¾/18⅛	15½/16½
Upriver fine	19½/23¾	23½/27¼	23 /27	20½/23½	21¼/24¼	21¾/23½	21¾/22½	21¼/22½	19¾/21¾	19½/20½	16½/19¼	15¾/16½
1930, Thin latex crepe	15 /16⅝	15⅝/16⅞	15⅜/16¼	14⅜/15⅞	14⅛/14¾	12⅛/14¼	10⅞/12¾	10¼/10⅞	7¾/10⅛	7⅝/ 9⅜	8⅝/ 9¾	8⅝/ 9⅞
Ribbed smoked sheet	14⅜/15¾	15 /16⅜	14⅞/15¾	14⅛/15½	13¾/14½	11¾/13¾	10⅜/12¼	9¾/10⅜	7½/ 9¾	7⅜/ 9	8¼/ 9½	8¼/ 9⅝
Upriver fine	15¾/16⅝	16¼/17	16¾/....	15¾/16¼	15½/15¾	14¼/15¼	13¼/14¼	13¼/....	12¼/13¼	12¼/....	12¼/12½	12¼/....
1931, Thin latex crepe	8⅛/ 8⅞	7½/ 8¼	7⅛/ 8⅝	6 / 7⅛	6¼/ 7⅛	6⅜/ 7½	6¼/ 7¼	5½/ 6¼	4⅞/ 5¾	4⅞/ $5\frac{9}{16}$	4⅝/ 5⅜	4⅝/ $5\frac{9}{16}$
Ribbed smoked sheet	7⅞/ 8½	7¼/ 8	6⅞/ 8⅜	5⅞/ 6⅞	6 / 6⅞	6⅛/ 7	5¾/ 6¾	$5\frac{1}{16}$/ 5¾	$4\frac{9}{16}$/ 5⅜	4½/ $5\frac{3}{16}$	4⅜/ 5	$4\frac{5}{16}$/ $5\frac{3}{16}$
Upriver fine	....	9¼/....	9 / 9⅜	8¼/ 9	8¼/ 8⅝	8⅛/ 8¾	8¼/ 8¾	7⅛/ 8⅝	6 / 7¼	6 /....	5¾/ 6¼	5½/ 5¾
1932, Thin latex crepe	4¾/ 5⅛	$4\frac{9}{16}$/ 4⅞	$4\frac{3}{16}$/ 4⅝	$3\frac{15}{16}$/ 4¼	$3\frac{11}{16}$/ 5	$3\frac{9}{16}$/ $3\frac{11}{16}$	$3\frac{9}{16}$/ 4	4 / $5\frac{1}{16}$	4 / 5⅛	3⅞/ 4¼	3⅞/ 4⅛	$3\frac{13}{16}$/ $3\frac{15}{16}$
Ribbed smoked sheet	4¼/ 4¾	$3\frac{9}{16}$/ 4¼	3 / 3⅝	$2\frac{15}{16}$/ 3⅛	2¾/ $4\frac{3}{16}$	2⅝/ 2¾	2⅝/ $3\frac{3}{16}$	$3\frac{3}{16}$/ 4½	$3\frac{7}{16}$/ $4\frac{9}{16}$	$3\frac{5}{16}$/ $3\frac{11}{16}$	$3\frac{5}{16}$/ $3\frac{9}{16}$	$3\frac{3}{16}$/ 3⅜
Upriver fine	5½/ 5¾	5¼/ 5½	5 / 5¼	5 / 5¼	5½/ 5¾	5½/....	5½/ 5¾	5¾/ 7½	6½/ 7¾	7¼/ 7¾	7¼/ 7½	6½/ 7½

IMPORTS, CONSUMPTION, AND STOCKS



United States Stocks, Imports, and Consumption

United States and World Statistics of Rubber Imports, Exports, Consumption, and Stocks

Twelve Months	U. S. Net Imports* Tons	U. S. Con-sumption Tons	U. S. Stocks on Hand† Tons	U. S. Stocks Afloat† Tons	United King-dom Stocks†‡ Tons	Singapore and Penang, Etc., Stocks†‡ Tons	World Pro-duction (Net Exports)‡ Tons	World Con-sumption Esti-mated‡ Tons	World Stocks†‡§ Tons
1929	561,454	466,475	105,138	62,389	73,276	36,768	863,410	785,475	228,572
1930	488,343	375,980	200,998	56,035	118,297	45,179	821,815	684,993	[illegible]66,034
1931	495,163	348,986	322,825	40,455	127,103	55,458	797,441	668,660	495,724
1932									
January	31,298	27,962	322,860	42,234	125,276	59,836	63,627	50,480	507,962
February	30,546	30,012	322,117	51,728	125,958	56,684	59,871	51,230	504,759
March	42,382	27,828	334,566	44,190	124,975	51,072	58,977	63,324	510,838
April	37,017	25,953	343,098	40,387	123,235	48,303	57,232	57,450	514,637
May	32,224	29,197	346,231	50,453	116,015	47,015	62,434	56,156	509,261
June	41,394	39,116	345,702	43,079	109,509	28,671	57,713	72,300	483,102
July	31,078	28,272	345,927	37,894	106,085	24,206	60,812	56,720	474,218
August	34,219	22,372	357,342	42,846	104,315	27,595	59,130	54,280	489,252
September	29,509	22,491	365,789	46,188	103,091	27,975	58,577	53,600	496,659
October	35,473	21,018	373,823	40,176	99,901	30,711	55,173	48,275	504,435
November	27,080	21,910	377,996	40,879	96,223	34,078	57,174	55,300	508,297
December	28,567	16,990	388,229	38,360	.....	.....	.....	.....	.....

* Including liquid latex, but not guayule. † Stocks on hand the last of the month or year. ‡ W. H. Rickinson & Son's figures. §Stocks at the 3 main centers, U. S. A., U. K., Singapore and Penang.

CONSUMPTION of crude rubber by manufacturers in the United States for December, 1932, totaled 16,990 tons, compared with 21,910 tons for November, 1932, a decrease of 22.5% according to The Rubber Manufacturers Association, Inc. Consumption for 1932 amounted to 313,121 tons as compared with 348,986 tons in 1931.

December, 1932, crude rubber imports were 28,567 tons, 5.5% above November, 1932, but 45.0% below December, 1931.

Total domestic stocks of crude rubber on hand December 31 are estimated at 388,229 tons, against November 30 stocks of 377,996 tons. December stocks increased 2.7% as compared with November, 1932, and 20.3% above December 31, 1931.

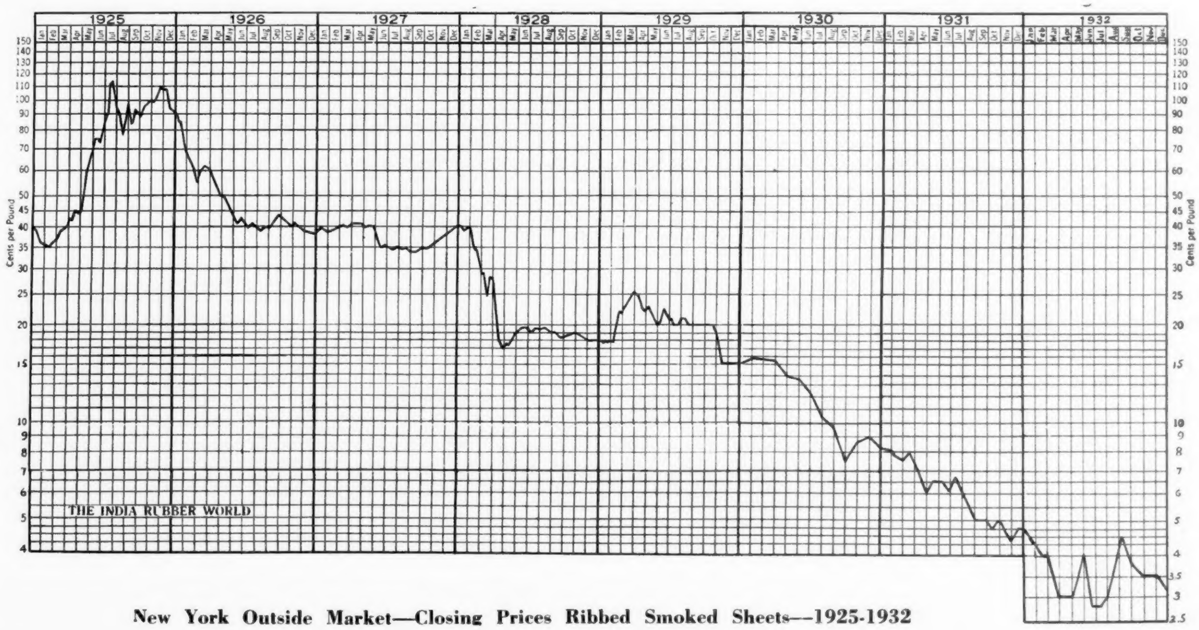
There were 38,360 tons of crude rubber afloat for the United States ports on December 31, compared with 40,879 tons afloat on November 30, 1932, and 40,455 tons afloat on December 31, 1931.

London and Liverpool Stocks

Week Ended	Tons London	Tons Liverpool
Dec. 31	37,741	55,056
Jan. 7	37,410	53,711
Jan. 14	37,361	52,950
Jan. 21	37,615	53,183

Lead-Free Zinc Oxide

In the short period of 2 years lead-free zinc oxide has been adopted as standard material by leading manufacturers of rubber goods in the United States and is meeting with steadily increasing favor. To insure prompt deliveries warehouse stocks are being carried in practically all important consuming centers by the St. Joe Lead Co., 250 Park Ave., New York, N. Y.



New York Outside Market—Closing Prices Ribbed Smoked Sheets—1925-1932

United States Statistics

Imports of Crude and Manufactured Rubber

	October, 1931		October, 1932	
UNMANUFACTURED—*Free*	Pounds	Value	Pounds	Value
Crude rubber	92,133,693	$4,803,582	78,614,507	$2,436,522
Liquid latex	598,575	43,238	1,592,028	69,053
Jelutong or pontianak	930,477	75,219	781,998	48,816
Balata	223,731	13,846	189,141	17,451
Gutta percha	....	....	78,768	3,720
Siak, scrap, and reclaimed	1,178,855	16,599	631,924	1,823
Totals	95,065,331	$4,952,484	81,888,366	$2,577,385
Chicle, crude ... *Free*	369,490	$175,636	62,146	$22,261
MANUFACTURED—*Dutiable*				
Tires ... *number*	6,142	$13,957	9,505	$66,270
Other rubber manufactures	....	101,185	....	83,731
Totals	....	$115,142	....	$150,001

Exports of Foreign Merchandise

RUBBER AND MANUFACTURES				
Crude rubber	3,534,897	$204,079	2,373,209	$98,022
Balata	6,516	1,650	20,843	3,167
Gutta percha, rubber substitutes, and scrap	131	79	20	13
Rubber manufactures	....	5,949	....	166
Totals	....	$211,757	....	$101,368

Exports of Domestic Merchandise

RUBBER AND MANUFACTURES				
Reclaimed	1,502,458	$68,127	453,696	$18,230
Scrap and old	3,477,077	60,759	3,910,847	58,902
Rubberized automobile cloth, *sq. yd.*	73,786	31,219	34,297	15,808
Other rubberized piece goods and hospital sheeting . *sq. yd.*	93,178	34,733	69,950	22,829
Footwear				
Boots ... *pairs*	103,258	185,970	7,491	15,158
Shoes ... *pairs*	114,588	128,116	15,689	13,112
Canvas shoes with rubber soles ... *pairs*	47,505	29,098	41,804	22,059
Soles ... *doz. pairs*	7,797	19,171	1,015	2,780
Heels ... *doz. pairs*	62,635	37,906	27,579	15,269
Water bottles and fountain syringes ... *number*	52,635	27,348	25,056	7,602
Gloves ... *doz. pairs*	5,808	14,495	4,949	9,832
Other druggists' sundries	....	35,631	....	24,494
Balloons ... *gross*	82,202	79,209	34,939	28,846
Toys and balls	....	5,718	....	3,360
Bathing caps ... *doz.*	1,263	2,757	3,765	4,942
Bands	42,973	14,054	14,888	3,930
Erasers	34,494	20,421	15,464	7,927
Hard rubber goods				
Electrical goods	128,646	11,729	91,654	15,494
Other goods	....	16,028	....	7,869
Tires				
Truck and bus casings, *number*	35,215	576,045	9,610	146,248
Other automobile casings, *number*	85,561	690,994	53,265	350,627
Tubes, auto ... *number*	79,183	104,730	36,206	38,220
Other casings and tubes, *number*	4,365	9,553	1,354	3,508
Solid tires for automobiles and motor trucks . *number*	904	26,019	449	10,666
Other solid tires	138,022	16,777	76,938	9,402
Tire sundries and repair materials	....	69,687	....	35,088
Rubber and friction tape	109,199	24,875	38,072	8,590
Belting	240,610	97,969	99,946	42,253
Hose	369,557	96,350	194,799	54,713
Packing	124,744	44,666	72,374	27,105
Thread	112,066	69,963	110,425	65,689
Other rubber manufactures	....	121,502	....	66,491
Totals	....	$2,771,619	....	$1,157,043

London Stocks, November, 1932

			Stocks, November 30		
LONDON	Landed Tons	Delivered Tons	1932 Tons	1931 Tons	1930 Tons
Plantation	2,115	3,830	40,571	73,877	76,778
Other grades	3	9	35	34	54
LIVERPOOL					
Plantation	*1,728	*3,685	*55,617	*56,233	*39,718
Total tons, London and Liverpool	3,846	7,524	96,223	130,144	116,550

*Official returns from the recognized public warehouses.

World Rubber Shipments—Net Exports

	Long Tons—1932						
British Malaya	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Gross exports	36,566	40,723	39,337	41,973	37,931	40,098	40,118
Imports	5,665	5,346	7,371	8,869	9,798	10,072	10,089
Net	30,901	35,377	31,966	33,104	28,133	30,026	30,029
Ceylon	3,444	3,501	4,717	5,129	2,945	4,146	*5,169
India and Burma	359	99	129	122	139	185	.....
Sarawak	481	442	506	614	583	683	644
British N. Borneo	234	*350	*350	*350	*350	*350	*350
Siam	166	184	300	340	428	371	406
Java and Madura	5,610	5,779	4,803	3,858	4,022	4,368	.....
Sumatra E. Coast	7,516	6,257	4,882	6,485	7,051	6,250	.....
Other N. E. Indies	5,507	6,145	7,244	7,664	8,944	9,080	.....
French Indo-China	1,218	1,233	1,088	1,621	1,147	*1,197	*1,211
Amazon Valley	394	232	303	318	414	1,164	.....
Other America	14	.....	.....	.....	.....	2	.....
Guayule	.....	.....	.....	.....	.....	.....	.....
Africa	125	141	49	78	247	154	.....
Totals	55,969	59,740	56,337	59,683	54,403	57,976	.....

*Estimate. *Compiled by Rubber Division, Washington, D. C.*

World Rubber Absorption—Net Imports

	Long Tons—1932		
CONSUMPTION	Sept.	Oct.	Nov.
United States	22,565	21,087	21,981
United Kingdom	6,901	7,821	9,513
NET IMPORTS			
Australia	625	569	1,653
Austria	195	308	233
Belgium	964	627	.....
Canada	2,770	1,207	1,593
Czechoslovakia	406	986	.....
Denmark	90	124	91
Finland	36	76	106
France	5,845	4,715	3,830
Germany	3,674	4,177	3,577
Italy	971	510	1,265
Japan	5,878	5,653	4,563
Netherlands	103	553	275
Norway	104	151	58
Russia	1,376	1,000	500
Spain	267	489	631
Sweden	304	188	234
Switzerland	62	65	72
Others	*800	*800	*800
Totals	53,936	51,106	.....
Minus United States (Cons.)	22,565	21,087	21,981
Total foreign	31,371	30,019	.....

*Estimate to complete table.
Compiled by Rubber Division, Department of Commerce, Washington, D. C.

Plantation Rubber Crop Returns by Months

	Br. N. Borneo (26 Companies)		Ceylon (102 Companies)		India and Burma (21 Companies)		Malaya (338 Companies)		Netherlands East Indies — Java (60 Companies)		Netherlands East Indies — Sumatra (60 Companies)		Miscellaneous (8 Companies)		Total (615 Companies)	
1932	Long Tons	Index	Long Tons	Index	Long Tons	Index	Long Tons	Index	Long Tons	Index	Long Tons	Index	Long Tons	Index	Long Tons	Index
January	352	72.0	1,378	67.5	208	37.0	14,409	115.9	2,791	106.3	4,712	116.9	212	117.1	24,062	107.6
February	336	68.7	738	36.2	82	14.6	11,854	95.3	2,793	106.4	3,894	96.6	120	66.3	19,817	88.6
March	365	74.6	1,187	58.2	152	27.0	11,355	91.3	3,071	116.9	4,210	104.4	143	79.0	20,483	91.6
April	318	65.0	1,209	59.2	149	26.5	11,991	96.4	2,761	105.1	4,046	100.3	163	90.1	20,637	92.3
May	277	56.6	897	43.9	99	17.6	12,711	102.2	2,530	96.3	4,364	108.2	171	94.5	21,049	94.1
June	298	60.9	1,196	58.6	36	6.4	12,353	99.3	2,312	88.0	4,263	105.7	167	92.3	20,625	92.2
July	308	63.0	1,221	59.8	16	2.8	13,069	105.1	2,226	84.8	4,173	103.5	140	77.3	21,153	94.6
August	307	62.8	954	46.7	19	3.4	12,728	102.4	1,732	66.0	4,075	101.1	134	74.0	19,949	89.2
September	293	59.9	1,096	53.7	33	5.9	11,627	93.5	1,606	61.2	4,364	108.2	116	61.7	19,135	85.6
October	336	68.7	1,004	49.2	73	13.0	12,287	98.8	2,229	84.9	4,221	104.7	118	65.2	20,268	90.6
November	341	69.7	1,190	58.3	103	18.3	11,909	95.8	2,533	96.5	4,159	103.1	126	69.6	20,361	91.0
11 months ending November,																
1932	3,531	....	12,070	....	970	....	136,293	....	26,584	....	46,481	....	1,610	....	227,539	....
1931	4,307	....	14,542	....	4,104	....	135,302	....	31,519	....	47,217	....	2,177	....	239,168	....

NOTE. Index figures throughout are based on the monthly average for 1929 = 100. Issued December 29, 1932, by the Commercial Research Department, The Rubber Growers' Association, Inc., London, England.